Five-Year Review Report

Second Five-Year Review Report
for
Raymark Industries, Inc. Site
Stratford, Connecticut

September 2005

Prepared by:

The United States Environmental Protection Agency
Region 1, New England
Boston, Massachusetts

EPA
New England

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Approved by:

Susan Studlien, Director
Office of Site Remediation and Restoration
U.S. EPA, New England

Date:

9-30-05

NOTICE

The development of this second five-year review for the Raymark Industries, Inc. Superfund Site, in Stratford, Connecticut, was funded by the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W6-0045, Work Assignment No. 144-FRFE-01H3, to Tetra Tech NUS, Inc. The document (RI051295F) was completed in accordance with the EPA Comprehensive Five-Year Review Guidance, OSWER No. 9355.7-03B-P (EPA 540-R-01-007), and was subjected to EPA and state review and comment. EPA provided all final decisions in the report.

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ACRONYMS

ACL	Alternate Concentration Limit
ARAR	Applicable or Relevant and Appropriate Requirement
AWQC	Ambient Water Quality Criteria
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
CTDEP	Connecticut Department of Environmental Protection
CTDOT	Connecticut Department of Transportation
DL	Detection Limit
DNAPL	Dense non-aqueous Phase Liquid
EE/CA	Engineering Evaluation/Cost Analysis
ELUR	Environmental Land Use Restriction
ESGC	Enhanced Soil Gas Collection
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
Facility	Raymark Facility
mg/kg	Milligrams per kilogram
MOU	Memorandum of Understanding
MW	Monitoring well
NAPL	Non-aqueous phase liquid
ND	Non Detect
NPL	National Priorities List
NTCRA	Non-time Critical Removal Action
O&M	Operations and Maintenance
OU	Operable Unit
OU1	Operable Unit No. 1 (typ.)
PCB	Polychlorinated biphenyls
Pod	Predesigned foundation
ppb	Parts per Billion
ppm	Parts per Million
PRP	Potentially Responsible Party
QA/QC	Quality Assurance/Quality Control
RAG	Remedial Action Guideline
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study

ACRONYMS (cont.)

ROD	Record of Decision
RPM	Remedial Project Manager
RSRs	Remedial Standard Regulations
RW	Raymark Waste
SDWA	Safe Drinking Water Act
SED	Sediment
SEL	Severe Effect Level
SGC	Soil Gas Collection
SSC	EPA/State Superfund Contract
Site	Raymark Industries, Inc. Site (Raymark)
SOW	Statement of Work
SSC	Superfund State Contract
SVOC	Semi-volatile Organic Compound
SW	Surface Water
SWQC	State Water Quality Criteria
TBC	To be Considered
TCL	Target Compound List
TtNUS	Tetra Tech NUS, Inc.
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
µg/L	Micrograms per Liter
VOC	Volatile Organic Compound

ES EXECUTIVE SUMMARY

This is the second five-year review for the Raymark Industries Inc. Site (Site) in Stratford, Connecticut. This statutory five-year review is required since hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The review was completed in accordance with EPA's "*Comprehensive Five-Year Review Guidance*" (EPA540-R-01-007) (EPA 2001).

The Raymark Facility (Facility), formerly named Raybestos - Manhattan Company, operated on the Site from 1919 until 1989, when the plant was shut down and permanently closed; however the property clean up actions were not completed until 1997. Subsequent to the completion of a Remedial Investigation/Feasibility Study (RI/FS), EPA designated the Facility as Operable Unit No. 1 (OU1). Other OUs that are affiliated with the site are OU2, OU3, OU4, OU5, OU6, OU7, OU8, and OU9. See Section 3.4 for a discussion on these other OUs.

The OU1 property is a 33.4-acre parcel that has been transformed from a single use industrial property that manufactured friction materials containing asbestos and non-asbestos components, metals, phenol-formaldehyde resins, and various adhesives to a shopping center with multiple businesses. The primary anchors are Walmart, Shaws, and Home Depot, with a new bank, Webster Bank, being built as this five-year review was being conducted. The parcel has always had a large parking area and building foot print. In the past, there were low-lying gravel and grass areas in addition to four lagoons that received manufacturing waste. In 1997, as part of Site cleanup, these areas were filled in and the property elevation raised substantially with the deposition of clean fill and a Resource Conservation and Recovery Act (RCRA) cap over the property. On top of this cap, buildings and an asphalt parking lot have been constructed in the past few years. In addition to the operating businesses, there are two treatment buildings on-site located in the eastern and western ends of the property. There are two entrances/exits on the property that lead onto busy roads and have traffic signals to control the traffic flow.

The Record of Decision (ROD) for Raymark OU1 was signed by EPA on July 3, 1995. The date of initiation of the OU1 source control remedial action is September 1995. A review is required every 5 years as hazardous contamination remains on OU1 above levels that allow for unlimited

use and unrestricted exposure. The first five-year review was completed in September 2000. This document presents the second review of the premises.

In the ROD, EPA selected a source control (for soils only) remedy for the Raymark – OU1 site. As stated in the ROD, the selected remedy was designed to provide containment of contaminated soils, control leaching of contaminants to the groundwater, and protect against surface erosion. The remedy included decontamination, demolition, non-aqueous phase liquid (NAPL) removal, capping, and institutional controls. In 1996 and 1997, as part of the property cleanup activities, the Site buildings were demolished and a permanent RCRA modified cap was placed over the entire Site. The groundwater under the Raymark Facility was not included in the source control remedy, but has been included in the overall groundwater RI (OU2) for the entire Raymark Site (see Section 3.4 for OU2 information).

EPA completed the source control remedy construction activities in 1997. In 1998, the Connecticut Department of Environmental Protection (CTDEP) assumed responsibility for the operation and maintenance of the Site. The formal EPA/state superfund contract (SSC) was signed between EPA and the State of Connecticut in 1995 for approval of the remedial action and a financial commitment of the required 10 percent cost share. Subsequent to the signing, there were three amendments for increases in funding obligations: January 6, 1997, July 21, 1997, and February 6, 1998. No administrative or technical modifications/changes have ever been formally documented. The SSC, in Appendix D of that document, refers to the future operation and maintenance tasks for the state and directs the state to comply with the to-be-developed operation and maintenance plan (subsequently developed in May 1998). The details on the operation and maintenance for the Site by CTDEP were broadly described in the 1995 ROD and the May 1998 Site operation and maintenance manual; however, specific compliance with these documents has been left to the discretion of CTDEP. The general guidelines for the state were: ensure long term integrity of the remedy, complete all routine monitoring, and perform system maintenance. No dollar levels or frequencies were identified to meet these goals.

Five-Year Review Protectiveness Statement:

The remedy at OU1 is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled.

The modified RCRA cap constructed over the source control remedy is functioning as designed and remains in good condition, thus preventing contact with the contaminated soils that remain on the OU1 Site.

Institutional controls, and a regular inspection program by the CTDEP, its consultant, and property management and its consultant, are in place at the Site. A fence and extensive plantings have directed access primarily through two busy traffic entrances/exits from the Site. A monitoring program is in place to maintain the requirements of the environmental land use restrictions that are recorded on the Site land records. CTDEP oversees this monitoring program.

Monitoring of non-aqueous phase liquid (NAPL), on site emissions, and groundwater are done routinely by the CTDEP and its consultant. To date, minimal NAPL has been recovered, emissions are below state air requirements, and groundwater contamination has not changed. The NAPL collection and off-gas treatment systems should be investigated to determine their effectiveness.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Raymark Industries, Inc. Superfund Site		
EPA ID *(from WasteLAN)*: CTD001186618		
Region: I	**State:** CT	**City/County:** Stratford/Fairfield
SITE STATUS		
NPL status: Final		
Remediation status (choose all that apply): Source Control Cleanup at OU1 completed; Groundwater cleanup not determined (part of OU2); O&M activities in place for OU1.		
Multiple OUs?* Yes	**Construction completion date:** November 1997 (OU1 source control)	
Has site been put into reuse? Yes		
REVIEW STATUS		
Lead agency: EPA		
Author name: Ronald Jennings		
Author title: Work Assignment Manager	**Author affiliation:** EPA Region I	
Review period:** 4 / 1 / 05 to 9 / 30 / 05		
Date(s) of site inspection: 6 / 9 / 05		
Type of review: Post - SARA		
Review number: 2 (second)		
Triggering action: Actual RA start at OU1		
Triggering action date *(from WasteLAN)*: September 1995		
Due date *(five years after triggering action date)*: September 2005		

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Five-Year Review Issues with recommendations for follow-up:

- **Issue 1**: A written contingency plan has not been prepared as required under 40 CFR 265 Subpart D; although there is an "informal" chain of command that ends with the CTDEP on-site Project Manager (Ron Curran) in the event there are problems or issues on the Site that need immediate attention. It is recommended that CTDEP should develop a contingency plan.
- **Issue 2**: A groundwater sampling plan and the associated groundwater monitoring are not being followed/performed as comprehensively as required in 40 CFR Subpart F nor is groundwater sampling being performed on the schedule identified in the state/EPA superfund contract. CTDEP has recently provided documentation of their current sampling program for inclusion into the O&M manual for the Site (see Appendix E). This revised sampling should be reviewed and concurred with by EPA.
- **Issue 3:** Only one recovery well, RW-3 is actually removing NAPL. EPA/CTDEP should conduct an assessment to determine whether pumping RW-3 should be discontinued or whether continued efforts to improve recovery would be useful. Significant on-site resources are used in sampling NAPL and the utility of continuing this effort should be evaluated.
- **Issue 4:** Soil gas from the SGC and ESGC systems are not being treated as specified in the O&M Manual. CTDEP states that the contaminant concentrations in influent soil gas are below treatment standards. CTDEP has recently provided the documentation of the changes to the O&M manual for the Site (see Appendix E). These revised changes should be reviewed and concurred with by EPA.

Protectiveness Statements(s)

The remedy at OU1 is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled.

1.0 INTRODUCTION

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

This report summarizes the five-year review process, investigations, and remedial actions undertaken at the OU1 Site, evaluates the monitoring data collected within the last 5 years, reviews the Applicable or Relevant and Appropriate Requirements (ARARs) specified in the Record of Decision (ROD) for changes, and describes the current status of OU1 and the eight other operable units.

The United States Environmental Protection Agency, Region 1 (EPA) prepared this five-year review pursuant to the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan. CERCLA §121 states:

> If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The EPA interpreted this requirement further in the National Contingency Plan; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The ROD for Raymark OU1 was signed by EPA on July 3, 1995 (EPA 1995). The date of initiation of the Raymark OU1 source control remedial action is September 1995. This statutory five-year review is required since hazardous contamination remains on Raymark OU1 above

levels that allow for unlimited use and unrestricted exposure. The first five-year review was completed in September 2000 (TtNUS 2000). This is the second five-year review for the Site. EPA has conducted this five-year review of the remedial action implemented at the Site. This review was conducted from April, 2005 through September, 2005. This report documents the results of that review. This report was developed by Ronald Jennings, EPA Project Manager, with support from Tetra Tech NUS, Inc. (TtNUS) under EPA Contract No. 68-W6-0045, W.A. No. 144-FRFE-01H3. Assistance in the development of this report was provided by the Connecticut Department of Environmental Protection (CTDEP). The activities conducted for the five-year review were based on the Statement of Work prepared by EPA and dated April, 2005 and on the approved TtNUS Draft Work Plan, dated June 23, 2005. Further, this review was completed in accordance with EPA's "*Comprehensive Five-Year Review Guidance*" (EPA540-R-01-007) (EPA 2001).

The OU1 Source Control ROD was signed in July, 1995. The selected remedy included decontamination, demolition, NAPL removal, capping, and institutional controls. Construction of this source control remedy began in 1995 and was completed in 1997. In 1999, the property was sold in a bankruptcy action to a consortium of companies who developed the property for retail purposes. The site currently has three businesses, Home Depot, Walmart, and Shaws, operating on the property; a bank is currently being constructed on the property. Operation and maintenance of the source control remedy was turned over to the CTDEP in August, 1998. Groundwater beneath and down gradient of OU1 is currently part of Operable Unit No. 2 (TtNUS 2005); a final decision on the cleanup remedy for the groundwater will be developed in the future.

2.0 SITE CHRONOLOGY

This section contains a table that presents the site historical events in chronological order to allow the reader to see the decisions made that lead to the selection of the cleanup remedy for the Site.

2.1 Chronology of Site Events

EVENT	DATE
Raymark Industries, Inc., manufactured automotive and heavy vehicle friction parts. Production processes generated waste by-products.	1919-1989
Waste by-products were disposed of in lagoons on the Raymark property. As lagoons became full, waste was excavated and used as fill on the Raymark property and throughout Stratford.	1919-1984
The town and CTDEP installed a cover for a number of municipal properties, temporarily protecting area residents from direct exposure to contaminated wastes.	1978 and 1993 - 1995
With EPA oversight, Raymark covered four lagoons, removed bags and containers filled with hazardous material, secured the property with fencing, boarded up buildings, and re-routed the on-site drainage system to minimize movement of contamination off the Raymark Facility.	Fall, 1992 – 1995
Dioxins were discovered on the Raymark Facility. Sampling of residential, municipal, and commercial properties revealed extensive amounts of lead, PCBs, and asbestos in addition to the dioxins in areas where Raymark fill was used in Stratford. The levels of these contaminants were reviewed by the Agency for Toxic Substances and Disease Registry and were considered a health risk. EPA began collecting and testing soil samples from properties located throughout Stratford where Raymark fill was suspected to have been used. As of 1995, about 40 residential areas showed contamination high enough to need clean up.	Spring, 1993
EPA conducted residential cleanups by excavating contaminated soils. The excavated material was trucked to and placed at the Raymark Facility.	1993 - 1995
EPA proposed to add the Raymark Facility and properties that contained Raymark waste to the National Priorities List (NPL). Listing on the NPL authorizes the expenditure of CERCLA funds.	January 18, 1994
The NPL listing was final	April 25, 1995.
Record of Decision signed	July 3, 1995
EPA/State Superfund Contract Signed	July, 1995
Stockpiling of contaminated soils from residential removals and Wooster School removal completed	July, 1995

EVENT	DATE
Demolition of on-site buildings began	September, 1995
Building demolition completed	April, 1996
RCRA cap liner system installation began	October, 1996
Treatment systems construction began	November, 1996
Liner system construction completed	August ,1997
Final site grading work completed	October, 1997
Site dedication	November, 1997
Site systems began operations	December ,1997
Operations & Maintenance Plan Completed	May, 1998
Operation and maintenance of Site turned over to CTDEP	August, 1998
CTDEP conducted oversight activities	1998 to present
First five-year review report	September, 2000
Construction of Wal-mart, Shaws, Home Depot (completed)	2002
Construction of Webster Bank (Initiation)	June, 2005
Second five-year review report	September, 2005

3.0 BACKGROUND

The following sections describe the former Raymark Facility OU1 physical characteristics, land and resource use, site history, and the basis for taking the cleanup action. The OU1 property is located at the intersection of East Main Street and Barnum Avenue Cutoff (see Figure 1-1).

3.1 Physical Characteristics

The OU1 Site is a 33.4-acre parcel that has been transformed from a single use industrial property that manufactured automotive friction materials, to a shopping center with multiple businesses. The primary anchors, Wal-mart, Shaws, and Home Depot, were completed in 2002. A new bank, Webster Bank, was under construction as this five-year review was conducted.

The parcel has always had a large parking area and building foot print. In the past, most of the property (approximately 60 to 70 percent) was covered by buildings and parking lots. The parking lots were a mix of low-lying gravel and asphalt that had deteriorated over the years. In addition, in the parking area were four lagoons that received manufacturing waste from the buildings/manufacturing process. In 1997, as part of the Site cleanup, these areas were filled in and the property elevation raised substantially with the deposition of clean fill and the placement of a modified RCRA cap over the property. On top of this cap, buildings and an asphalt parking lot have been built. Presently, the two treatment buildings on-site are located in the eastern and western ends of the property. There are two entrances/exits on the property that lead onto busy roads and have traffic signals to control the traffic flow.

3.2 Land and Resource Use

The entire property is presently used as a large, active shopping center. It is surrounded by roads on the northern, eastern, and southern ends of the property. There is an operating railroad track along the perimeter of the western side of the property. Today, the property is almost completely covered by an asphalt parking lot and buildings. There are trees around the perimeter of the property and small plantings throughout the parking lot area. The shopping center has an active loading/unloading area for vehicles in the rear of the building along the railroad tracks. There are garden centers located in both ends of the building at Home Depot

and Wal-mart. There is no overnight parking allowed on the property (Wal-Mart has a national policy that encourages truckers to park at its stores). There currently is no bus traffic that exceeds the weight limits of 3000 lbs./square foot allowed on the property.

An environmental land use restriction (ELUR) was placed on the property through the property land records. Per the restriction, there is no digging on the property deeper than 18 inches without written approval from the Commissioner of CTDEP and EPA. If deeper digging is requested, there is a notification to both CTDEP and EPA that must be prepared, that includes design drawings with sufficient detail to grant permission. All permission must be granted before the work is executed. A violation of this ELUR prohibition induces a fine of up to $25,000 per day per violation. There is an orange “warning layer” that is approximately 8 inches above the cap. Over the past 5 years, CTDEP has issued an enforcement action against Wal-mart for violating the ELUR, although no damage to the engineered control (cap) occurred.

The ELUR on the Site also prohibits activities such as: residential use, erecting a building or structure outside the building pods, planting trees that could compromise the integrity of the cap, exceeding load limits on-site, erection of any structure that could restrict access to the treatment buildings, installation of wells or borings, open burning, auto repair or service establishment, gasoline station, car wash, dry cleaners, TSD facility, collection, storage, use or handling of hazardous substances including household hazardous waste and cleaning materials and/or any activity which could compromise the integrity of the cap.

3.3 History of Contamination

The Facility, formerly named Raybestos - Manhattan Company, operated on the Site from 1919 until 1989, when the plant was shut down and permanently closed; however the property clean up actions were not completed until 1997 (see Figure 3-1 for former Facility features). Subsequent to the completion of an RI/FS, EPA designated the Facility as Operable Unit No. 1 (OU1). In 1995 and 1996, as part of the property cleanup activities, the Site buildings were demolished and a permanent cap was placed over the entire property.

Raymark manufactured friction materials containing asbestos and non-asbestos components, metals, phenol-formaldehyde resins, and various adhesives. Primary products were gasket material, sheet packing, and friction materials including clutch facings, transmission plates, and

brake linings. As a result of these manufacturing activities, soil at the Site became contaminated with metals, asbestos, and polychlorinated biphenyls (PCBs). Groundwater at the Site became contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals.

During the Facility's 70 years of operation, it was common practice to dispose of manufacturing waste as "fill" material both at the Raymark Facility, as well as at various locations in Stratford. The manufacturing wastes from different plant operations were used to fill low-lying areas on-site to create additional space for Facility expansion. Based on aerial photographs and reported knowledge of site activities, most of the on-site disposal occurred between 1919 and 1984, and progressed essentially from north to south, across the Site. As a result of the disposal of these manufacturing wastes on the property, soils at the Facility became contaminated primarily with asbestos, lead, copper, and PCBs. New buildings and parking areas were constructed over these filled areas as the manufacturing Facility expanded. During this same time frame, Raymark also offered manufacturing wastes as "free fill" to employees, residents, and the town.

While operational, the Facility was underlain by an extensive manmade drainage system network used to collect water and wastes from the manufacturing operations as well as divert them into the Facility drainage system, which also collected storm water runoff. These liquids were transported through the drainage system network, mixed with lagoon wastewaters, and discharged to Ferry Creek.

During peak operations at the Facility, approximately two million gallons of water were used for plant processes each day. Municipal water was used for both contact and non-contact cooling water. During the 1970s, to supplement this source, Raymark installed an additional on-site supply well. The well, located in the northeastern corner of the Facility, was used for non-contact cooling water. Facility water was re-circulated, with some percentage re-injected into the on-site well; the remaining water and municipal water were discharged through the Facility's drainage system. Wastewater from Facility operations was collected and discharged to a series of four settling lagoons located in the southwestern corner of the Facility, and along the southern property boundary near Longbrook Avenue and the Barnum Avenue Cutoff. The wastewater consisted of wastewater from the acid treatment plant, wet dust collection, paper

making processes, non-contact cooling water, and wastewater from the solvent recovery plant operations. The lagoons also received storm water drainage and surface water runoff.

Solids were allowed to settle in Lagoon Nos. 1, 2, and 3 prior to the discharge of clarified wastewater and unsettled solids to Lagoon No. 4. Lagoon No. 4 discharged into Ferry Creek. Discharge of wastewater to Lagoon Nos. 1, 2, and 3 ceased in 1984. These lagoons were closed in December 1992 and January 1993. During the fall of 1994, storm water drainage that exited the Raymark Facility through Lagoon No. 4 was diverted around this lagoon and connected directly to the storm sewer. The storm sewer ultimately discharged to Ferry Creek. Lagoon No. 4 was closed in early 1995, prior to the placement of the permanent cap over the property.

During the operation of the lagoons, the settled material in the lagoons was periodically removed by dredging. During the Facility's 70 years of operation, it was common practice to dispose of both this dredged lagoon waste and other manufacturing waste as fill material both at the Raymark Facility and at various locations throughout Stratford.

A number of the non-Facility (non-OU1) locations where Raymark waste was disposed of as "free fill" were contaminated with asbestos, lead, copper, and/or PCBs at levels that posed a potential threat to public health. To abate the potential health threat to residential properties, residential locations were cleaned up under CERCLA time-critical removal actions from 1993 to 1996. The excavated material from these residential locations was placed under a permanent cap at the Raymark Facility. Raymark waste identified at one municipal property, Wooster Middle School, was also excavated, stored, and placed under a permanent cap at the Raymark Facility (OU1).

A number of these other locations have been investigated to determine the extent of contamination due to disposal of Raymark manufacturing wastes. Many of these areas have been identified as health risks. For the purposes of investigation, these areas have been divided into nine operable units (OU). As shown on Figure 3-2, these units are:

- Raymark Facility (OU 1)
- Groundwater contamination (OU 2)
- Upper Ferry Creek Area (OU 3, Area I)

- Raybestos Memorial Ballfield (OU 4)
- Shore Road (OU 5)
- Additional Properties (OU 6)
- Lower Ferry Creek Area (OU 3, Area II or OU 7)
- Beacon Point Boat Launch Area (OU 3, Area III or OU 8)
- Short Beach Park and Stratford Landfill (OU 9)

The eight other operable units (OU2 to OU9) are in various stages of investigation. This report includes a summary and status update of these eight other operable units (See Section 3.4).

3.4 Other Operable Units

The description, history, and current status of Operable Units 2 through 9 associated with the Raymark Industries, Inc. Superfund Site are presented below. See Figure 3-2 for the location of each operable unit.

3.4.1 OU2, Groundwater RI Activities

OU2 encompasses approximately 500 acres, including the Raymark OU1 Site. The groundwater beneath the Site was included in this OU2 investigation; therefore the OU1 source control remedy only addressed the contaminated soils. Approximately half of the 500 acres are zoned as commercial, containing highways and business activities; the remaining area includes residences and water bodies. The focus of investigation in the OU2 area is groundwater that has become contaminated with VOCs and metals that appear to be attributable to the former Raymark Facility. No soils or sediments are included in this OU.

The OU2 study area is bounded by the Housatonic River to the east; just above Selby Pond to the south; Interstate-95 (I-95)/Blakeman Place to the southwest; Patterson Avenue to the northwest; and the East Main Street/Dock Shopping Center to the north. Most of the 500-acre OU2 study area is downgradient of the former Raymark Facility and includes areas that may have been affected by wastewater discharge, surface water runoff, direct deposition of manufacturing waste, and groundwater contaminant migration from the former Raymark Facility. A portion of the OU2 study area includes an area where VOCs were found to be impacting

indoor air. This indoor air area is downgradient of the facility, within the groundwater study area.

A Draft Final Remedial Investigation (RI) Study was completed in November, 2000 (TtNUS 2000). Additional information was collected in 2002 and 2003 in order to fill data gaps identified in the Draft Final RI. EPA issued a final RI report in January 2005 describing contamination and potential health risks for OU2 (TtNUS 2005).

The RI report identified six source areas for groundwater contamination, including four from the former Raymark Facility, one that is upgradient from the Facility, and one from Raymark waste located on a different property. The ultimate fate of the contaminant plumes from these sources is Ferry Creek or the Housatonic River. Since groundwater in the study area and surrounding areas is not used as a drinking water source, the primary pathways of potential human risks are inhalation of volatiles present in indoor air due to volatilization of groundwater contaminants through building foundations, direct contact with surface water contamination from migration of groundwater to Ferry Creek, and ingestion of shellfish from Ferry Creek that may be contaminated from the migration of groundwater.

The RI report found that residential homes near the Raymark Superfund Site are located above a groundwater plume, and volatile organic compound concentrations in both shallow and deep groundwater are above the State of Connecticut volatilization criteria. Sampling results confirmed the presence of site-related VOCs inside residential homes. As a result of these studies, 121 homes located within the study area were offered sub slab depressurization systems; sub slab depressurization systems were installed in 106 homes (15 refused systems). See Appendix C for the write-up on the most recent site visit confirming the installation of the sub slab depressurization systems by EPA and CTDEP. CTDEP is responsible for the O&M for these systems. The RI report concludes that the risk from volatilization of contaminants present in groundwater has decreased with the installation of these systems.

Based on the site visit described in Appendix C, the following needs future attention:

1. Continue to provide routine maintenance and equipment repairs for the 104 installed systems.

2. Maintain a list of properties in the area with and without the SSD systems.

3.4.2 OU3, Area I - Upper Ferry Creek Area

Originally, OU3 was defined as the commercial properties (Morgan Francis, Spada, Housatonic Boat Club), and Ferry Creek and included the surrounding wetlands where Raymark-type waste was known to have been deposited. During the investigatory stage, this area was further divided into additional operable units (OU3, Area I; OU3, Area II (OU7); OU3, Area III (OU8); and OU6). Currently, OU3 Area I encompasses the wetland areas of upper Ferry Creek that abut some of the OU6 commercial properties. The RI for OU3, Area I, released by EPA in October 1999, described contamination and potential health risks in this area (TtNUS 1999). Further action at this OU has been delayed at the request of the Raymark Advisory Committee (RAC), a town appointed citizens group. The RAC requested this delay until a more comprehensive cleanup could be developed for all OUs, in particular OU6. See Sections 3.4.6 and 3.4.7 for discussions on OU3, Areas II and III, respectively.

3.4.3 OU4 - Raybestos Memorial Field

OU4 is located north of the former Raymark Facility. It encompasses a total area of 13.5 acres and includes the 3-acre Raybestos Memorial Ballfield, an 8.5-acre vacant field, and a 2-acre densely wooded area. This OU only addresses the contaminated soils on the property. Groundwater beneath the area is included in OU2. An RI for OU4 was released in August 1999 (TtNUS 1999).

The ballfield was built using waste fill from the Raymark Facility and was used as a softball field from the 1940s until the 1980s. Prior to development as a ballfield, the site was used as a gravel pit operation for an unknown period of time and was then used to dispose of brake linings and associated industrial waste. The former Raymark Industries Inc. Company disposed of an unknown quantity of wastes containing asbestos and non-asbestos material, metals, pheno-formaldehyde resins, and various adhesives on this study area. The southern and western portions of the OU4 were used by the Town of Stratford as a dumping and temporary storage area for asphalt, road salt, brush and leaves, dirt, and trash. The public also used this area as a dump. In the 1970s, Raymark Industries, Inc. performed two cleanup activities to place a 2-foot soil cover over identified areas of surficial asbestos contamination.

In 1992, EPA fenced the area, sampled and removed drummed wastes, and placed a soil cover over contamination at the site. EPA released a final Remedial Investigation report in August 1999 that described the nature and extent of contamination at this area. Further action at this OU has been delayed at the request of the Raymark Advisory Committee (RAC), a town appointed citizens group. The RAC requested this delay until a more comprehensive cleanup could be developed for all OUs, in particular OU6. In conjunction with this five-year review, TtNUS inspected the fence and cover in May, 2005 to verify current Site conditions and the effectiveness of the EPA action. See Appendix C for the write-up on the most recent site visit confirming the Site status.

Based on the site visit described in Appendix C, the following needs future attention:

1. The fence erected by EPA during removal actions in 1993/1994 has been deliberately cut to provide access between the ballfield and the abutting Contract Plating property. This fence should be repaired to prevent trespassing on the ballfield.

2. A person and at least an animal are living in a small trailer on the ballfield property. This should be addressed immediately.

3. The property access should be limited with better security to prevent trespassers.

4. A reconnaissance of all on-site groundwater wells should be made and repairs made as needed (at least one well near an on-site trailer was no longer locked.).

5. A break in the fence from a Clinton Avenue residence should be repaired and disposal of yard waste and other trash should be stopped. Residents should be informed that Raymark waste is visible on the surface.

6. Property owner(s) should be informed that on-site dumping of construction or other materials should cease.

3.4.4 OU5 - Shore Road Area

OU5 is approximately 4 acres and includes a 1,340-foot section of Shore Road, the Housatonic Boat Club (HBC), and a small portion of the eastern slope of the Shakespeare Theater property. The area in this OU was originally part of OU3, Area II, area C, which included the HBC area and wetlands south of the HBC, and was evaluated in the Draft OU3 RI report, June 1998. An investigation of the contaminated soils within the HBC area was further investigated and was subsequently identified as OU5. No groundwater investigation of this OU has been implemented.

In 1993, contamination in the OU5 area was covered with an interim plastic fabric barrier and wood chips by the CTDEP as a temporary measure. The area was sampled extensively in 1998/1999 and high levels of contamination were found in the surface soils. As the area was contaminated, and because the plastic barrier was beginning to wear and the wood chips were beginning to erode, EPA accelerated the cleanup. A Draft Final Engineering Evaluation/Cost Analysis (EE/CA), issued in June, 1999, presented the cleanup alternatives (TtNUS 1999). In September 1999, following the public comment period, EPA released an Action Memorandum documenting its cleanup strategy.

The Action Memorandum stated that EPA would test waste stabilization techniques that could minimize the release of waste dust during the excavation of Shore Road wastes. It also stated that wastes from the Shore Road Study Area would be deposited in a temporary storage facility within Stratford. During the public comment period on the EE/CA, EPA discussed the Raybestos Memorial Ballfield and/or the Contract Plating Company property as potential temporary storage facilities for the approximately 35,000 cubic yards of soil.

Based on the negative public support for waste storage at either location, EPA decided to suspend final remedial action at the study area. Instead, an interim non-time-critical removal action (NTCRA) was performed. This interim action included limited temporary capping of contaminated hot spots, relocation of utilities, repair of existing stone riprap revetment, restoration of the western shoulder and embankment cover along Shore Road, and placement of sheet piling to prevent erosion of materials. EPA began these excavation and cleanup activities in 1999 and completed them in 2000. An Interim Removal Action Report for the NTCRA was issued in September, 2002 (Stone & Webster 2002). A Draft Final RI report and a

Draft FS report for OU5 were issued in March 2002; however, neither document has been finalized. No additional reports are currently scheduled for release. See Appendix C for the write-up on the most recent site visit confirming the status of interim action.

Based on the site visit described in Appendix C, the following needs future attention:

1. Cracks in pavement should be sealed, especially along Shore Road.

2. Repair of monitoring well MW-532S and roadbox and monitoring well MW-530 should be made.

3. Geotextile repairs to the cover (south of the entrance to the boat club and along the concrete block retaining wall) and riprap repair (downstream of boat ramp structure) should be made.

4. Additional soil cover is needed for exposed areas south of the boat club entrance.

5. Settlement along the retaining wall and pavement should be regularly monitored for changes.

3.4.5 OU6 - Additional Properties

OU6 includes 157.1 acres comprised of 24 properties with contaminated soils impacted by waste from the former Raymark Facility. These properties are not all contiguous to each other and are scattered, mainly along the eastern edge of Stratford, running north to south (see Figure 3-2). This OU does not include groundwater (OU2) or sediments (OU3).

Fourteen of the 24 properties were previously evaluated in OU3 as part of a larger investigation of soil and sediments. The OU3 evaluations did not evaluate properties individually, rather the 14 properties were included as part of the larger areas. EPA subsequently decided to divide its efforts into soil-only properties and sediment-only areas. The 14 properties within OU3 became part of OU6 in order to be re-evaluated individually as part of the soil-only evaluation. The remaining 10 properties in OU6 are located throughout the town.

An RI report for the OU6 properties was issued in June (TtNUS 2005). The particular cleanup approaches for these properties will vary by property depending on the extent of contamination and the risks to human health and the environment at each property.

3.4.6 OU7 Lower Ferry Creek, Selby Pond, and the Housatonic River Wetlands (formerly OU3, Area II)

The area in OU7 was originally part of OU3. It includes lower Ferry Creek and adjacent wetland properties (Area B), the wetlands surrounding the Housatonic Boat Club property (Area C wetlands), and Selby Pond and the surrounding wetlands (Area F). These locations are downgradient of the former Raymark Facility and may have been affected by wastewater discharge, stormwater drainage, surface water runoff, Raymark waste direct deposition, and groundwater contaminant migration. The name designations used for locations and properties in this report are those that have become convention for the study area, as established by EPA. This OU does not include soils (OU6) or groundwater (OU2). An RI for this OU was released in 2000 (TtNUS 2000). Further action at this OU has been delayed at the request of the Raymark Advisory Committee (RAC), a town appointed citizens group. The RAC requested this delay until a more comprehensive cleanup could be developed for all OUs, in particular OU6.

Area B covers approximately 18 acres, including wetlands, Ferry Creek, a small portion of the Housatonic River, small areas of grass and vegetation, and a man-made ridge or dike composed of fill debris that runs along the edge of wetlands along Lockwood Avenue and Ferry Creek. Area C includes about 8.1 acres of wetlands south and adjacent to Area B. Area F (Selby Pond Site) covers approximately 6.4 acres, including wetlands, open water, and grass and vegetation surrounding the wetlands. Portions of the Area F wetlands are located on residential properties.

3.4.7 OU8 - Beacon Point Boat Launch Area (formerly OU3, Area III)

The area in OU8 was originally part of OU3. OU8 includes a public boat launch area, a dry dock area, and the surrounding wetlands impacted by Raymark waste (north and south of the boat launch) near Beacon Point Road (Area D); and a wetland area along Elm Street adjacent to and south of 1260 Elm Street (Area E). These locations are downgradient of the former Raymark Facility and may have been affected by wastewater discharge, stormwater drainage, surface water runoff, manufacturing waste direct deposition, and groundwater contaminant migration.

An RI for this OU was released in 2000 (TtNUS 2000). Further action at this OU has been delayed at the request of the Raymark Advisory Committee (RAC), a town appointed citizens group. The RAC requested this delay until a more comprehensive cleanup could be developed for all OUs, in particular OU6.

Area D covers approximately 20 acres, including undeveloped wetlands, open water, and man-made features (the public boat launch, the dry dock area, and an erosion barrier along the shoreline). Area E is a 30-foot-wide strip located approximately 600 feet west of the southern portion of Area D. It covers about 1 acre, which is entirely wetland. This OU does not include soils (OU6) or groundwater (OU2).

3.4.8 OU9 – Short Beach Park and Stratford Landfill

OU9 includes Short Beach Park and the Stratford Landfill. Short Beach Park is a public recreation area which was constructed over a town landfill in the 1980s. Stratford Landfill is a former landfill used by both the Town of Stratford and the City of Bridgeport; today the landfill accepts brush-type waste only.

The OU9 study area encompasses a total of 80.4 acres abutting Long Island Sound near the mouth of the Housatonic River. The historic review performed for these areas indicated that past dumping of Raymark waste had occurred at these locations. Field investigations were undertaken to identify whether soils in the study area contained Raymark waste. This OU does not include sediments or groundwater.

An RI report was issued in July, 2005 (TtNUS 2005). The report found that the study area does contain waste from the former Raymark Facility.

3.5 Basis for Taking Action

EPA selected a source control (for soils only) remedy for the Raymark – OU1 site. The entire 33.4 acres was contaminated with wastes from the manufacturing processes that took place on the OU1 Site over the 70 years of operation. The selected remedy only addressed the contaminated soils. The groundwater under the former Raymark Facility was included in the overall groundwater for the entire Raymark Site encompassing approximately 500 acres in

Stratford. The overall site chronology is presented in Section 2.0. It presents the history of the decisions made that lead to the selection of the cleanup remedy for OU1. The field investigation work was undertaken at OU1 primarily during the early 1990s, from 1991 to 1995; however, because it was an operating RCRA facility, samples of the groundwater, lagoons and other waste streams were sampled in the 1980s as well. The following provides an overview of the sampling that occurred on the Site (HNUS 1995).

- Geologic Investigations – 1981 to 1993
- Groundwater sampling – 1981 to 1994 (subsequent sampling rounds have occurred up to 2005, but they were performed after the ROD was signed)
- Sediment sampling -1992
- Soil samples – 1992 (chemical analysis)
- Building samples – 1992
- Surface Water samples – 1993
- Tidal Study – 1994

The selected source control remedy addressed the source of contamination at Raymark Industries, Inc., by eliminating or reducing the risks posed by the Site. See Section 4.1 for a discussion of the selected remedy. See Figure 3-3 for the final Site layout. See Figure 3-4 for the location of the final post closure wells.

This five-year review is the second five-year review for the Site, based on the actual remedial action start date of September 1995.

4.0 REMEDIAL ACTIONS

This section describes the remedial actions selected for and implemented at the Site as described in the Record of Decision (ROD) dated July 3, 1995 (EPA 1995). Update on the remedy maintenance was provided by Ron Curran of the CTDEP.

4.1 Remedy Selection

As part of the Final Source Control Feasibility Study (FS) for the OU1-Raymark Facility, remedial action objectives were developed for the Site. These objectives were developed to mitigate existing and future potential threats to human health and the environment. As summarized in the ROD, these remedial action objectives were the following (expansion of these objectives is presented in Section 5.0):

- To minimize direct exposure (incidental ingestion and dermal contact) to the contaminated soil-waste materials;

- To minimize leaching of contaminants to groundwater from on site source areas; and

- To prevent human exposure to contaminants in the buildings, process equipment, and subsurface drains.

Five source control alternatives were evaluated for OU1-Raymark Facility. Details of each are presented in the ROD. The selected remedy was a “source control” alternative, designed to provide containment of contaminated soils, control leaching of contaminants to the groundwater, and protect against surface erosion. The remedy included decontamination, demolition, non-aqueous phase liquid (NAPL) removal, capping, and institutional controls. As stated in the ROD, the remedy required the following to be completed as part of the cleanup remedy. Each of these items are discussed in the section below denoted in parenthesis.

- Decontamination and demolition of all Raymark Facility buildings and structures (4.2.1).

- Backfilling low-lying areas within the Raymark Facility with demolition materials and/or with those materials placed on the Raymark Facility from the residential and Wooster Middle School excavations (4.2.1).

- Compaction and grading of the site to provide the appropriate slope for the base of the cap (4.2.1).

- Capping of the site with a RCRA Subtitle C multi-layered impermeable cap, including soil gas collection (4.2.2, 4.2.4, 4.2.5).

- Removal of highly concentrated pockets of liquid (solvent) contamination from contact with groundwater from known areas (4.2.3).

- Ensuring the long-term integrity of the cap through an adequate operation and maintenance program and institutional controls (deed restrictions) (4.2.6).

- Conducting routine monitoring of groundwater and surface water, and air monitoring at the site (4.2.7).

- Five-year reviews (4.2.8).

Details on the components described above can also be found in the *Remedial Action Report for the Raymark Industries, Inc. Superfund Site, Raymark Industries Manufacturing Plant, Operable Unit 1* (Foster Wheeler 1999) or the *Basis of Design/Design Analysis Report* (Foster Wheeler 1996).

In addition, the ROD contained provisions for undertaking additional studies to further evaluate the extent of groundwater contamination beneath and migrating from the Raymark Facility. These studies were to determine whether this groundwater contamination is impacting, or may in the future impact, human and/or environmental receptors. The selected groundwater cleanup remedy will be addressed in a separate ROD as part of OU2-Groundwater. The status of this effort is described in Section 3.4.1.

4.2 Remedy Implementation

This section describes the responsibilities for and implementation of the components of the remedy specified in the ROD.

According to the Remedial Action Report (Foster Wheeler 1999), the design of the remedial action began in May 1995 with the development of planning documents and design specifications for the demolition of the Raymark buildings. Design of the cap, the NAPL and gas collection treatment facilities, and the groundwater monitoring wells began at about the same time. The EPA contracted with the U.S. Army Corps of Engineers (USACE) to complete the cleanup and stabilization of the Raymark Site, and the USACE chose Foster Wheeler Environmental Corporation (now Tetra Tech EC, Inc.) as the contractor to carry out the work, including the demolition and cap construction activities and the operation of the cap and associated treatment and monitoring systems for a specified period after the cap was completed (Foster Wheeler 1998). In August, 1998, the operation and maintenance of the site was turned over to the CTDEP.

Demolition of the on-site buildings began in September, 1995 and was completed in April, 1996. The ground improvement programs began in February, 1996. The installation of the cap liner system began in October, 1996, and the treatment systems construction began in November, 1996. The cap liner system construction was completed in August, 1997, and the final site grading work was completed in October, 1997. All Site work was complete in November, 1997. The site systems began operating in December, 1997. The Site operations and maintenance began in 1998. The implementation of each component of the remedy is described below.

4.2.1 Decontamination, Demolition, Backfilling, Compaction, and Grading

According to the Remedial Action Report (Foster Wheeler 1999), approximately 15 acres of industrial buildings were demolished, and most of the demolition materials were disposed of on-site. Metal materials were decontaminated and recycled when possible, and asbestos was removed and properly disposed of off-site. Sub grade improvements were completed, including compaction of the subsurface within the building pod areas to increase the ability to support building loads. The existing storm water system was excavated, the piping removed or crushed in place, and the areas backfilled. Storm water quality units were installed. The residential and

Wooster School waste soils and remaining demolition material were spread and stabilized across the site. The gas vent sand layer and gas collection piping was installed, and provisions were made for the installation of the NAPL wells and piping and the groundwater monitoring wells. Compaction and grading were performed according to design. Backfill and bedding materials were brought to the site and graded according to design.

4.2.2 Cap Construction

The ROD provided for construction of a multi-layered, impermeable cap to prevent potential human contact with the on-site soil-waste contaminants and prevent further contaminant leaching into groundwater from precipitation. An impermeable cap layer was constructed over the 33.4-acre Site above a soil gas collection sand layer. The cap unit substantially raised the Site elevation. The entire surface of the Site outside the building pod areas was covered with grass or pavement.

The impermeable layer consists of a geo-synthetic clay liner (GCL), a linear low-density polyethylene flexible membrane liner, and a geo-composite drainage layer. The impermeable liner layer was designed with utility corridor trenches for storm drainage piping and future utility installation. Storm drainage piping was installed in trenches above the impermeable liner layer, to drain cap surface water to a collection area for pumping into the storm drain system.

4.2.3 Removal of NAPL

As described in the ROD, the remedy was to include removal of NAPL to the reasonable extent practicable and send it off-site. NAPL was to be measured and removed from the two existing on-site monitoring well clusters. If successful, removal would continue until the wells were decommissioned due to capping activities, and then new recovery wells would be constructed. According to the Remedial Action Report, the two monitoring well clusters were pumped to remove NAPL during the demolition phase, and the information from this removal was used in the design of the currently installed NAPL extraction system.

The current NAPL extraction system was constructed in the western portion of the site (see Figure 3-3) where the concentrations of VOC contaminants were greater than 1 percent of the solubility limit in groundwater. It consisted of five extraction wells with dedicated pumps,

conveyance piping, and a storage tank with secondary containment in the western treatment building. The storage tank was protected by a dry chemical fire suppression system.

Over the past years, NAPL recovery has been low, and only one well, MW-3, has actually produced any NAPL. To date, the following quantities of NAPL has been collected:

- Nov. 2003 - 55 gallons (from a drum)
- June 2002 - 1,000 gallons from the tank, however this was water from the re-development of the recovery wells, so it was not pure NAPL; however it was sampled and characterized as hazardous waste.
- July 2001 - 460 gallons from the tank
- March 2000 - 165 gallons from a drum

On the June 9, 2005, site visit for this 5-year report, a new recovery tank was installed for the NAPL recovery system. It was noted that the NAPL recovery system had not been operational since 2004 when a small hole in the recovery tank was discovered. CTDEP expects the unit to be back in operation by the fall of 2005.

4.2.4 Soil Gas Collection

The western and eastern soil gas collection (SGC) and eastern enhanced soil gas collection (ESGC) systems control volatile organic emissions from the materials beneath the cap to prevent vapor migration off-site or into future on-site buildings and to prevent damage to the geotextile membranes in the cap. In order to control volatile organic emissions released from the waste materials beneath the cap, the soil gas collection systems collect the gases that build up beneath the cap's hydraulic barrier and convey them to the treatment buildings. Soil gases are gathered using blowers to provide a vacuum on piping systems installed in a gas vent sand layer.

The SGC system consists of 11 collection zones containing perforated piping in the gas vent sand layer and conveyance piping to deliver the collected gases to the eastern or western treatment buildings. Each zone pipe has a drip leg to collect water that condenses in the pipe. Approximately 70 to 200 gallons of liquid are collected every 3 months. The drip legs are checked weekly and pumped out as needed. Any water that is collected is discharged into the

on-site sanitary sewer. This is detailed as per a Connecticut General Permit for the *Discharge of Groundwater to a Sanitary Sewer* dated August 13, 1996. The permit requires quarterly sampling and the results are sent to CTDEP as well as the Stratford Waste Authority.

The western treatment building contains the process equipment, instruments, and controls for western portion of the SGC system (as well as for the NAPL collection system). Gases delivered to this building originally were treated with granular activated carbon prior to discharge. However, because concentrations of VOCs were below Maximum Allowable Concentration limits during almost 10 years of data collection, CTDEP discontinued the carbon treatment and the system discharges directly to the atmosphere.

The changes from the carbon treatment to no treatment prior to discharge, and the change from the Thermox® (on-site emission treatment system described in Section 4.2.5) to carbon treatment were made with the knowledge of the CTDEP and the EPA Project Manager. However, as of the date of the site visit (June 9, 2005) a written request to make the change had not been prepared by the CTDEP. However, this information has now been formally documented in an update to the Operation and Maintenance (O&M) Manual. See Appendix E.

4.2.5 Enhanced Soil Gas Collection System

The ESGC system was constructed in the northeastern part of the Site in the area of the historical toluene spill. The ESGC system consists of 12 wells and conveyance piping connected to the eastern treatment building. Vacuum is applied to the wells. Air is injected into some collection points to provide make-up air to the subsurface.

The eastern treatment building contains the process equipment, instruments, and controls for the ESGC system and the eastern portion of the SGC system. The equipment includes a thermal oxidizer (Thermox), which was originally used to treat (burn) the collected gases prior to discharge to the air. However, over the past 5 years, CTDEP and its contractors, have sampled the intake and out take air from the system and determined that the sample results are largely unchanged. Thus, the expense of running the system was not justified. CTDEP subsequently replaced the Thermox unit with activated carbon units to capture soil gas vapors prior to discharge. The granulated activated carbon offers the same performance at a substantial cost savings.

4.2.6 Institutional Controls

As part of the cleanup of the Raymark OU1 Site, there is an environmental land use restriction (ELUR) on the property to protect the integrity of the cap so it prevents penetration of the Site surface greater than 18 inches in depth (from the original grade of the property). With the final site grading, all subsurface components of the Engineered Control are greater than 2 feet bgs. Further, if someone does dig on the property there is a warning layer approximately 8 inches above the cap that will remind persons to stop digging in that area (it is a "orange layer"). This ELUR restriction prohibits excavation greater than 18 inches in depth without written approval from the Commissioner of CTDEP and EPA. Formal approval must be requested and design drawings must show the location of all subsurface features. The ELUR is recorded on the land records for the Site. It carries a fine of up to $25,000 per day per violation.

The ELUR on the Site also prohibits activities such as: residential use, erecting a building or structure outside the building pods, planting trees that could compromise the integrity of the cap, exceeding load limits on-site, erection of any structure that could restrict access to the treatment buildings, installation of wells or borings, open burning, auto repair or service establishment, gasoline station, car wash, dry cleaners, TSD facility, collection, storage, use or handling of hazardous substances including household hazardous waste and cleaning materials and/or any activity which could compromise the integrity of the cap.

4.2.7 Operation and Maintenance/Monitoring Activities

Because contaminants remain on site, long-term groundwater and storm water monitoring are a component of the remedy as described in the ROD. Monitoring of the cap cover, NAPL collection system, and soil gas collection systems are also performed as part of the operation and maintenance (O&M) of the remedy.

Groundwater sampling and monitoring began in 1995 by EPA prior to the construction of the shopping center. EPA transferred oversight authority for the groundwater sampling at OU1 and the other O&M activities in late 1998 to CTDEP.

To meet its O&M responsibilities, CTDEP hired a consulting firm to perform the routine sampling, inspection, and monitoring tasks. According to Ron Curran of the CTDEP, the costs

for this work, exclusive of CTDEP staff costs, is approximately $225,000 annually; however, additional monies may be available for Raymark by shifting state priorities for O&M activities. CTDEP also developed agreements with the property owner and tenants for them to maintain and inspect certain aspects of the property. Description of these agreements and the site operation and maintenance activities are described in Section 4.3.

As part of capping the Site, 53 groundwater monitoring wells were installed in 16 well clusters throughout the site (see Figure 3-4). The purpose of the monitoring, according to the ROD, was to check the cap effectiveness, the quality of groundwater leaving the Facility, and potential impacts to downgradient groundwater. As stated in the O&M Manual (Foster Wheeler 1998), each well cluster consists of three or four wells of different depths—a shallow well, deep well, bedrock well, and in some cases a medium-depth well. Since the wells were installed in order to monitor groundwater beneath the Site after capping of the Site, any wells that existed before the Site was capped were decommissioned and/or removed as part of the demolition activities prior to capping.

According to the O&M Manual, the new well locations were selected based on numerous factors, including historical groundwater contamination data, elevated levels of semi-volatile organic compounds and metals, the presence of NAPLs, and migration pathways. In addition, wells were located at the perimeter of the site in order to monitor groundwater flowing off of, and on to, the Site. The O&M Manual contains a recommended groundwater sampling schedule for the Site. The following is a summary of the schedule:

Quarterly

Sampling of 14 wells (11 clusters: 11 shallow wells, one medium, two deep) for VOCs

Annually

Sampling of all 53 wells (all 16 clusters) for VOCs
Sampling of seven wells (Clusters 15 and 16) for SVOCs
Sampling of four wells (Cluster 02) for PCBs

Every Five Years

Sampling of all 53 wells for VOCs, SVOCs, PCBs, and metals.

EPA conducted groundwater sampling in December, 1997 in all 53 wells and in November 1998 in selected wells. Subsequent sampling has been the responsibility of CTDEP. According to the Draft Initial Post-Remediation Groundwater Monitoring Report (M&E 1999), sampling was conducted in accordance with the Post Remediation Groundwater Monitoring Work Plan that was approved by CTDEP. The sampling round in August 1999 was considered the annual sampling event. Sampling for VOCs, SVOCs, and PCBs was performed at the wells recommended in the O&M Manual.

The next sampling event was a quarterly sampling event in April, 2000, for VOCs at 12 wells designated by CTDEP (2 fewer than the 14 recommended in the O&M manual). Half of these wells sampled were those recommended in the O&M Manual, and half were not. Nine were shallow wells, one was medium, and two were deep. These 12 designated wells were sampled quarterly for VOCs through January, 2003, and then semi-annually in October, 2003 and 2004. The change from quarterly to semi-annual sampling was a CTDEP decision. In addition to the annual sampling conducted in August, 1999, annual sampling events took place in April, 2001; July, 2002; April, 2003; and April, 2004. There was no annual sampling event in 2000. Sampling for VOCs, SVOCs, and PCBs was performed at the wells recommended in the O&M Manual. According to CTDEP, they also anticipate making formal requests to EPA to reduce the frequency of sampling in the near future. Any changes that CTDEP makes will be appended to Section 12.0 of the O&M manual.

A five-year sampling event was performed during the July, 2002, annual event, 5 years after the beginning of Site operation and the 1997 sampling. Sampling of all 53 wells was performed for VOCs, SVOCs, PCBs, and metals, as recommended in the O&M Manual. This sampling event operation included measurement of water table elevations, as well as sample collection and analysis. The results of these activities were reported in the post-remediation groundwater monitoring reports for each sampling event. The reports included discussion of groundwater flow direction and groundwater sample analytical results (See Sections 6.4.1 and 6.4.2.).

4.2.8 Five-Year Reviews

A five-year review of Raymark OU1 is required because hazardous waste contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. This is the second five-year review for this Site.

4.3 Operation and Maintenance (O&M)

The components of the selected remedy that are ongoing at the Site include ensuring the long-term integrity of the cap, maintaining the storm water system, operating the soil gas collection systems and NAPL extraction system, and routine groundwater and storm water monitoring. These components require on-going maintenance to remain operational. A maintenance and inspection schedule has been developed by CTDEP so systems at the Site remain operational, thereby ensuring the remedy remains protective of human health and the environment. Subsystems associated with these components are operated and monitored from the western and eastern treatment building onsite, and include the following as described in Section 2.0 of the Final O&M Manual (Foster Wheeler 1998):

- Site grounds including fencing, paving, and landscaping (Section 4.3.1).
- Storm water system including the liner system water collection sumps (Section 4.3.2).
- Soil Gas Collection (SGC) system including the piping system, blowers, thermal oxidizer, condensate collection system, carbon vessels, drip legs, and vacuum monitoring points (Section 4.3.3).
- Enhanced Soil Gas Collection (ESGC) System including the piping, air injection blowers, off-gas blowers, thermal oxidizer, and condensate collection system (Section 4.3.3).
- Dense non-aqueous phase liquid (NAPL) pumping system including well head vaults, piping, NAPL storage tank, and associated pumping and monitoring devices (Section 4.3.4).
- Groundwater monitoring wells (Section 4.3.5).
- Treatment Buildings (Section 4.3.6).

The activities described in the O&M Manual are summarized below. More detailed discussion of the activities performed by CTDEP and consultants is contained in Section 6.5, Site Inspection.

One critical component of Site Maintenance is the ELUR that is recorded on the property land records. This protects against cap breaches and maintains Site integrity.

CTDEP changes are incorporated into Section 12.0 of the O&M manual. A summary of CTDEP changes to date is presented in Appendix E.

4.3.1 Site Grounds

As detailed in the O&M Manual, inspection of the cap pavement, vegetation, and perimeter fence, are performed to verify that they are intact and that the integrity of the cap has not been compromised through weathering, settlement, plants, animals, or man-made intrusions. Any compromised areas are repaired or replaced. During the TtNUS Site visit in June 2005, no issues related to fencing, paving, or landscaping were identified.

4.3.2 Storm Water Runoff

The remedy as described in the ROD included a storm water monitoring component. Since almost the entire property is either paved or under a building, water management is a concern during a rain event. The storm water system collects site surface runoff through catch basin and trench drains and conveys the collected runoff to on-site gross-particle/oil water separators before discharge to the Connecticut Department of Transportation (CTDOT) drainage system and Ferry Creek. Four sumps along the boundary of the Site collect subsurface water that runs off the top of the cap liner. Water in these sumps is pumped directly into an adjacent storm sewer. Surface water run-off from the cap cover and infiltration channeled by the drainage layer within the cap can be sampled to assess the quality of the water discharging to the storm drain.

The consultant for the property management firm conducts monthly inspections of the property, primarily to inspect the external portions of the buildings and to inspect the storm water drainage system basins. The latter inspection must be conducted at least semi-annually as required under the storm water permit. If the storm water basins are filled with grit (a subjective evaluation), then the basins are cleaned out by a pumping company and the grit removed.

4.3.3 Soil Gas Collection Systems

As detailed in the O&M Manual, maintenance and inspection of SGC piping, drip legs, air blowers, condensate storage tanks, carbon units, thermal oxidizer, and vacuum monitoring wells is routinely performed.

The collection of the vapors that develop under the cap is critical to maintaining the cap integrity as well as to prevent migration of vapors into nearby buildings. Elaborate piping systems were installed across the Site to facilitate the removal of vapors. Currently, the removed vapors are piped into one of the two treatment buildings for treatment prior to release to the atmosphere.

The western and eastern SGC systems control volatile organic emissions from the source control area beneath the cap to prevent vapor migration off-site or into future on-site buildings. The systems consist of a high permeability vapor collection layer of sand beneath the cap's hydraulic barrier. Eleven conveyance zones of piping were installed in this sand layer. Each zone pipe has a drip leg to collect water that condenses in the pipe. Drip legs are checked weekly. Approximately 5 gallons are pumped each week from the drip legs and discharged to the sanitary sewer. Drip leg water is sampled quarterly. Blowers provide a vacuum for the piping systems. Soil gas collected by the blowers in the eastern treatment building has been treated with a thermal oxidizer prior to discharge; although CTDEP has changed this, based on historical OU1 sampling data over 8 years, to a carbon treatment system. All soil gas collected by the blowers in the western treatment building was initially treated with granular activated carbon prior to discharge. This has changed, based on historical sampling over 8 years, to no treatment prior to discharge. CTDEP has amended Section 12.0 of the OU1 O&M Manual (see Appendix E).

In the northeast portion of the site, in addition to the soil gas system, there is an enhanced soil gas collection (ESGC) system in the area of the historic toluene spill. The ESGC system was designed to reduce the concentration of VOCs present in the soils of the northeastern portion of the Site. The extraction points for the system were installed in areas where absorbed-phase concentrations of NAPLs exceeded 1,000 mg/kg or was visible when encountered. The ESGC system consists of 12 wells screened above the water table. The wells are connected to the eastern treatment building, and soil gases are pumped and treated in the same manner as the SGC system.

The quantity and concentrations of collected soil gases are periodically monitored prior to discharge to the atmosphere as part of the O&M conducted by the CTDEP consultant. The thermal oxidizer for the ESGC system (eastern side) has been replaced with carbon treatment units. Gases are monitored before and after carbon treatment. The carbon unit for the SGC system (western side) is no longer used because the contaminant concentrations are below Connecticut allowable limits.

The drip legs that collect water that condenses in the vapor collection piping system are pumped out every week and the water is discharged into the on-site sanitary sewer. The permit requires quarterly sampling, and the results are sent to CTDEP as well as the Stratford Waste Authority.

4.3.4 NAPL Recovery Wells

As detailed in the O&M Manual, the NAPL extraction wells and conveyance piping is maintained and inspected routinely, including the extraction pumps, storage tank, and dry chemical fire suppression system. The extraction wells and storage tank are sampled regularly (see O&M manual for schedule). The system has been off-line since the fall of 2004 due to a small leak in the recovery storage tank detected during a routine inspection of the recovery tank. It is anticipated that the NAPL system will be put back on-line by the fall of 2005. When operational, the NAPL system is inspected on a routine basis as follows: weekly checks of recovery wells, piping and storage tank; monthly checks of NAPL level in tank as well as cleaning of pumps and sensors.

The conductivity sensors in the NAPL recovery wells become coated with NAPL which masks the water/NAPL interface; therefore, the NAPL pumps are operated manually. Future NAPL recovery operations may be modified or eliminated over time based on the OU2 cleanup options.

4.3.5 Monitoring Wells

As detailed in the O&M Manual, the maintenance and inspection of monitoring wells, including well redevelopment procedures and the sampling of groundwater according to schedule and procedures is described in O&M Manual. See discussion of monitoring activities in Section 4.2.7

for details about groundwater sampling schedule. See also Section 6.4.2 for groundwater sampling analytical results.

4.3.6 Treatment Buildings

The treatment buildings are included in the routine site inspections – both as part of the treatment systems and as stand alone structures. The inspections include observing the conditions of the buildings and their systems for security, power, fire suppression, telephone, lighting, and control center for all on-site treatment processes. These inspections are recorded on the weekly, monthly, and quarterly inspection forms by CTDEP and/or its consultant.

5.0 PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

This is the second five-year review for the Site. The first five-year review, completed in 2000 (TtNUS 2000), concluded that the following components of the remedy were protective of human health and the environment and that the objectives for the cap have been met:

- The cap minimizes direct exposures to the contaminated soil-waste materials. Inspections of the cap and land use restrictions in the deed appear to be sufficient to ensure long-term protectiveness.

- Leaching of contaminants to groundwater from on-site sources is limited by the presence of the cap and by the NAPL recovery system currently in place. Long term groundwater monitoring of on-site wells provides data on groundwater quality, flow direction, and potential impacts to downgradient groundwater. In conjunction with groundwater monitoring under OU2, long term groundwater monitoring of all on-site wells will aid in determining whether the cap continues to function effectively.

- The risk to human health associated with inhalation exposures to airborne asbestos and/or volatile organic compounds was minimized during the demolition and construction phases of remedy implementation, through perimeter air monitoring and fugitive emissions control measures. Currently, the cap prevents exposure to asbestos found in the soil-waste materials (asbestos and asbestos containing materials were removed from on-site buildings, machinery, and piping prior to demolition and disposed at an off-site facility). Vapor migration off-site or into on-site buildings is prevented by a soil gas collection (SGC) system and enhanced soil gas collection (ESGC) system. These systems control volatile organic emissions from the soil matrix and waste beneath the cap through a high permeability vapor collection layer above the waste and underneath the cap's hydraulic barrier.

Based on the information gathered during this five-year review, these cap objectives were still being met on site at this time; however, documentation on the continuation of NAPL collection using the current wells, and the effectiveness of the SGC and ESGC systems with the changes proposed by CTDEP, need to be documented in the O&M Manual as an appendage to Section 12.0.

The first five-year review found no substantial areas of noncompliance with the remedial objectives, but it noted several minor areas of discrepancy and made recommendations in some of the areas. These issues and recommendations are presented below. The progress made on each issue over the last 5 years is noted below the issue, with current updates from this five-year review cycle.

- **Issue 1 (from First Five-Year Review)**: A written contingency plan has not been prepared as required under 40 CFR 265 Subpart D.

- **Progress**: No recommendation was made in the first five-year review on this issue. There is still no contingency plan in place, although there is an "informal" chain of command that ends with the CTDEP on-site Project Manager (Ron Curran) in the event there are problems or issues on the Site that need immediate attention. There is an alarm auto-dialer in the treatment buildings to alert staff remotely located in the event there is a system problem. Local officials have not toured the buildings or property regularly; most local officials are only on Site to inspect a specific request or change.

- **Issue 2 (from First Five-Year Review)**: Groundwater monitoring is not being performed exactly as required in 40 CFR Subpart F. Parameters establishing groundwater quality, specifically chloride and sulfate, and some parameters listed in Appendix III of Subpart F, are not being analyzed for. Quarterly sampling has not been consistently performed.

- **Progress:** No recommendation was made in the first five-year review on this issue. The parameters analyzed since 1997 are the general parameters recommended in the O&M Manual—VOCs, SVOCs, metals, and PCBs. These parameters do not include chloride and sulfate.

  Quarterly sampling and analysis was performed consistently from April, 2000 to January, 2003, when the quarterly schedule was changed to semiannual by CTDEP. The sampling schedule was in accordance with the O&M Manual, except that the 12 monitoring wells selected for quarterly VOC sampling were in some cases different from the 14 wells recommended in the O&M Manual. After January, 2003, the quarterly VOC sampling was reduced to semiannual by CTDEP. All changes to date are presented in Appendix E. These changes will be appended to Section 12.0 of the O&M

Manual. Ron Curran stated that CTDEP is considering further changes to reduce the frequency of sampling. One possibility is changing quarterly sampling for VOCs to every 9 months, and the annual sampling to every 5 years. This would save costs, and the 9-month schedule would allow for sampling during all seasons, but it would also reduce the comparability of data over time due to the seasonal variation.

There is no direct impact to human health or the environment from the changes/differences, as there are no receptors drinking the water and sub slab depressurization systems have been installed in down gradient homes. Vapors from the Site are collected in on-site treatment systems prior to release (although this process may change in the future). Also groundwater has been sampled under and down gradient of the Site as part of Raymark OU2. At a minimum, all changes to sampling procedures are documented as amendments to the O&M Manual. Section 12.0 of the O&M Manual indicates the process to be followed.

- **Issue 3 (from First Five-Year Review):** A groundwater sampling plan is provided in the Operation and Maintenance Manual; however, a Memorandum of Understanding (MOU) between EPA and the State of Connecticut detailing the duties required by the State of Connecticut and allowable regulatory variations might be valuable. Trends in groundwater contaminant levels should continue to be evaluated and reported under the O&M sampling activities.

- **Progress**: Trends in groundwater contaminant levels have continued to be evaluated and reported according to the O&M Manual with the variations noted above**.** Appendix E provides the documentation of the changes made to date by CTDEP to the O&M Manual. This is valuable as the only written document is the original EPA/State contract from 1997 that is very general and leaves much open to interpretation. The O&M Manual, and its updates, provide documentation on the continuing oversight of OU1.

- **Issue 4 (paraphrased from First Five-Year Review):** A review of the limited available groundwater data was performed to determine if continued pumping of NAPL recovery well RW-3 (the only recovery well currently recovering NAPL; see Figure 3-3) is warranted. Review of the limited groundwater and NAPL analytical results indicate that continued pumping of RW-3 may not be needed. This recommendation is made based on the small amount of NAPL collected from the NAPL recovery system and the

observed increase of VOC concentrations at the MW-14 cluster that are at or exceed the 1-percent effective solubility. These observations indicate the possibility that NAPL has been mobilized during either pumping or other site remediation activities.

- **Progress:** No assessment has been made since the first five-year review as to whether pumping of RW-3, the only recovery well that is actually removing NAPL, should be discontinued. Concentration at MW-14, and other on-site wells, has fluctuated significantly over the past years (For MW-14 the NAPL concentrations have ranged from 2.2 to 9620 µg/L and should continue to be monitored.). Efforts to improve recovery are planned by CTDEP. The possibility remains that recovery pumping or other remedy activities mobilized the NAPL identified in the RI and ROD. It is difficult to draw conclusions based only on current data. According to Ron Curran, the CTDEP currently plans to continue NAPL recovery until the OU2 groundwater cleanup plans are complete.

- **Issue 5 (from First Five-Year Review):** The monitoring of the groundwater quality at the Site should continue and wells in the vicinity of possible NAPL should be monitored using an interface probe to detect the presence of NAPL. These new data should be evaluated and compared to 1 percent of their effective solubilities to determine if pumping of the NAPL recovery well should resume.

- **Progress:** Since the first five-year review, the amount of NAPL recovered from RW-3 has continued to be low, and none has been found in the other wells. Pumping stopped in the fall of 2004 due to a leak in the NAPL storage tank. A new tank has been installed, and pumping is planned to resume in the fall of 2005, when a new pump purchased for RW-3 is installed.

  No assessment has been made as to whether pumping of RW-3 should be discontinued. Groundwater monitoring has continued, and monitoring of NAPL levels in RW-3 has continued, even when pumps in the wells were not working. As stated in Issue 4, an assessment should be made of the value of NAPL pumping using the current system. It is questionable whether the system is cost effective given the small amount of NAPL that has been removed over the past 8 years.

6.0 FIVE-YEAR REVIEW PROCESS

This section provides a summary of the five-year review process and the actions taken by EPA to complete the review.

6.1 Administrative Components

EPA, the lead agency for this five-year review, notified CTDEP and the Town of Stratford in May, 2005 that the five-year review would be conducted. EPA issued a scope of work, WAF No. 144-FRFE-01H3, under EPA RAC 1 Contract No. 68-W6-0045 for TtNUS, to assist EPA in performing the five-year review. The Work Assignment Manager is Ronald Jennings. Ron Curran of the CTDEP was part of the review team. The schedule established by EPA included completion of the review by September 2005.

6.2 Community Notification and Involvement

The initial public announcement of the upcoming Five Year Review was made by EPA staff at the meeting of the Raymark Advisory Committee (RAC) on February 8, 2005. The RAC is the local citizen group appointed by the Town and charged with reviewing all of the Raymark activities in Stratford. The February meeting was also attended by representatives of the Town of Stratford, the Connecticut Department of Environmental Protection, U.S. Congresswoman Delauro's district office, and reporters from the local media outlets. Three fact sheets describing the Five Year Review process were distributed at the February meeting. EPA repeated the announcement at the May 10, 2005 RAC meeting and invited citizens to participate in Five Year Review community interviews. A press release announcing the Five Year Review was sent to four local newspapers on June 1, 2005 and the release was posted on the EPA New England website (see Appendix A for fact sheets and press release).

During the early to mid-1990s there was considerable interest by the community in the investigation of the Raymark waste throughout Stratford. Now after 12 years of investigation, the interest is primarily in the final outcome of the process. Many in Town feel that the investigation process has been disruptive to the residents and detrimental to property values, yet recognize the necessity of a thorough cleanup by EPA; others would like to discontinue the

process and let things remain as they are. All residents and officials recognize that funding is a major issue for completion and would like final resolution to be quicker than anticipated.

There were 11 interviews completed. These are identified on the Interview Documentation Form (see Appendix A). In general, the individuals interviewed had no significant complaints about OU1. Since OU1 has been cleaned up and now is an operating shopping center, most people have ignored this property and concentrated on the other Raymark operable units as they have only been completed through the investigation phase (see Section 3.4).

6.3 Document Review

This five-year review included a review of relevant documents including the ROD, the O&M Manual, the Remedial Action Report, and periodic post-remediation groundwater monitoring reports. The documents reviewed are listed in Appendix B.

The list of ARARs (Appendix D) was also reviewed for changes that might affect the protectiveness of the remedy. Mr. Curran, CTDEP, indicated that the remedy continues to comply with Connecticut requirements. See also Section 7.0.

6.4 Data Review

As stated in the ROD, the groundwater beneath the Facility was to be sampled and analyzed to monitor the effectiveness of the cap, the quality of the groundwater leaving the Facility, and potential impacts to the downgradient groundwater. For this five-year review, the groundwater monitoring data were evaluated in order to assess cap effectiveness. The potential impacts to downgradient groundwater are assessed in the OU2 RI (TtNUS 2005). The data reviewed for this five-year review included:

- The EPA collected groundwater samples from all 53 wells in December 1997 and sampled selected wells in November 1998. Subsequent sampling was performed for the CTDEP by its consultant, Metcalf & Eddy (M&E). Annual sampling for VOCs, SVOCs, and PCBs were conducted by CTDEP in August 1999, April 2001, July 2002, April 2003, and April 2004. There was no annual sampling event in 2000.

- Quarterly samplings for VOCs were conducted at the 12 wells designated by the CTDEP from April 2000 through January 2003, and then semi-annually in October 2003 and 2004. A five-year sampling event was performed during the July 2002 annual event.

- The sampling events included measurements of water table elevations, as well as sample collection and analysis. The results of these activities, as well as the analytical data from the 1997 and 1998 samplings, were summarized by CTDEP in post-remediation groundwater monitoring reports for each sampling event. The reports addressed groundwater flow directions and groundwater sample analytical results. Discussion of these topics is presented below.

6.4.1 Groundwater Flow

The movement of groundwater beneath the Facility and the surrounding area was evaluated in the Raymark OU2 RI report (TtNUS, 2005). According to the RI report, shallow groundwater beneath the northern end of the Facility flows to the east toward the Housatonic River. Shallow groundwater beneath the central and southern portions of the Facility flows to the southeast, and most of this groundwater also discharges to the Housatonic River. Only the shallow groundwater beneath the extreme southern end of the facility flows toward Ferry Creek. The shallow groundwater flows very slowly beneath the northern end of the Facility, and it flows much faster beneath the southern end of OU1.

6.4.2 Groundwater Monitoring Analytical Results

Trends in groundwater contaminants were evaluated in the quarterly, annual, and semi-annual reports prepared for CTDEP. Most of the groundwater monitoring reports generally indicated that VOC and SVOC levels were “relatively stable” and “relatively consistent” with previous sampling events at most locations, but that some VOCs at some wells had increased or decreased significantly from previous samplings. The groundwater was sampled for metals in July 2002, and the annual report for that sampling event stated that “low concentrations of metals were detected in all of the monitoring wells”. PCBs were not detected in any of the sampling events. All of the reports highlighted significant changes at particular wells and presented selected temporal trend plots along with a complete set of analytical results.

VOC Analysis

For this five-year review, the reported groundwater monitoring data for six VOCs were grouped by well cluster, and trends in the annual sampling data for each well depth in each cluster were evaluated from the 1997 sampling event to the April 2004 sampling event. The October 2004 semi-annual data also were included for the 12 wells sampled in that event, in order to incorporate the most recent, available data into the review. The six VOCs evaluated in the trend analysis were: chlorobenzene, 1,1-dichloroethene (DCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), and vinyl chloride. These VOCs were selected because they occur at high concentrations in the groundwater beneath OU1, and they were detected downgradient in homes located over contaminated groundwater. See Figure 6-1 (data is presented on the ten-page figure by monitoring well reference in this section by page number i.e. see page 1 of 10, Figure 6-1). A more in depth analysis of groundwater trends is presented in the OU2 RI (TtNUS 2005).

In order to focus on the most significant levels of contamination, only VOCs with reported concentrations greater than 100 µg/L in at least one well in a given cluster were included in the analysis. The data for the six VOCs are summarized on Table 6-1. Figure 6-1 presents temporal trend plots for each cluster of wells (**S**hallow overburden, **M**edium overburden, **D**eep overburden, **B**edrock as shown for each contaminant figure).

The temporal trends in the six VOCs shown on Figure 6-1 detected in the shallow (S) wells appear to be consistent with the conclusion that the cap is effectively preventing surface water from penetrating and leaching contaminants from the vadose zone. On Figure 6-1, the VOC concentrations were non-detected (ND) or very low at most of the S wells over the evaluated time period. In cases where VOCs were detected at high levels in the S wells at the beginning of the time period, most show a decreasing trend in concentration. For example, in MW-3S toluene was detected at 6100 µg/L in 1997 and declined to ND by 2002 (see page 2 of 10). In MW-4S, toluene declined from 170,000 µg/L in 1997 to 1760 µg/L in October 2004; and in MW-4S, 1,1,1-TCA began at 3900 µg/L and was ND thereafter (see page 3 of 10). Several other VOCs showed decreases over the period in the S wells.

Cases where VOC levels rose in shallow monitoring wells were the exception. Toluene was ND or very low in MW-6 until April 2004, when it jumped to 928 µg/L (see page 4 of 10). MW-6 was

installed at the site of a toluene spill that occurred in the early 1980s. The sudden increase in toluene at this location may be due to high springtime water levels mobilizing residual toluene contamination in soils that usually lie above the water table. Alternatively, the sudden reappearance of toluene could be due to the on-site migration of a nearby off-site source, or it could signal a shift in the migration direction of the toluene plume that had originated from the spill and was described in the OU2 RI.

Chlorobenzene was ND in MW-3S in 1997; it then rose to 7740 µg/L by 2001 and declined to 972 µg/L by April 2004 (see page 2 of 10). This trend can be attributed to movement of the chlorobenzene plume that was delineated in the OU2 RI. TCE and 1,1,1-TCA were both very low in MW-12S over the period of record, except for a spike in concentration in 2002 (see page 8 of 10). Again, this spike may be due to water table-driven leaching or shifts in groundwater flow directions.

In a few cases, VOC levels fluctuated up and down without a discernable trend. Chlorobenzene ranged from 700 µg/L to 1,020 µg/L in MW-14S over the period of record and ended at 894 µg/L (see page 9 of 10). The concentration of 1,1,1-TCA in MW-9S was 1600 µg/L in 1997 and varied but remained high throughout the entire period. 1,1-DCE and vinyl chloride also fluctuated up and down in MW-9S over the period (see page 6 of 10). Similar trends were observed in the deeper groundwater at MW-9 and MW-14, and both well clusters are downgradient from known or suspected, saturated-zone sources of DNAPL. Consequently, the observed fluctuations in contaminant levels are probably due to factors other than infiltration-driven leaching.

In the medium (M), deep (D), and bedrock (B) wells, consistently low concentrations or downward trends are seen for the six VOCs at all depths in clusters MW-5 (northern section), MW-8 (south-central section), MW-11 (south-central section) and MW-16 (southwestern corner, perimeter). At the remaining clusters, there is considerable variability among the depths and over time, and VOC concentrations were very high at several wells. In some cases, the concentration of a VOC in a cluster fell over time at one depth but rose at another.

At MW-2 near the southeastern perimeter of the Facility, 1,1,1-TCA and 1,1-DCE were very high at all depths except S in 1997 (see page 1 of 10). Concentrations of 1,1,1-TCA and 1,1-DCE generally declined by April 2004 but were still quite high. Concentrations are expected to

remain high in these wells, because there is a suspected 1,1,1-TCA-rich and 1,1-DCE-rich DNAPL source in the deep overburden and shallow bedrock near the MW-2 well cluster (TtNUS 2005).

Chlorobenzene was ND at three wells near the eastern perimeter in 1997, but it was subsequently detected and concentrations increased over time. At MW-1M, the concentration rose to 698 µg/L in 2003, and then fell to ND in April 2004 (see page 1 of 10). At MW-3, chlorobenzene rose to high levels (up to 7740 µg/L) in the S and M wells, and then fell slightly in April 2004. Chlorobenzene levels also rose from ND to 2540 µg/L at MW-4D (see page 2 of 10).

TCE concentrations have been consistently high in wells located along the western perimeter of OU1. At MW-10, TCE levels were stable at the M depth and rose at the S, D, and B depths. At MW-13, TCE fell at the D depth (840 µg/L to 111 µg/L), and rose at the B depth (2000 µg/L to 6500 µg/L) (see page 8 of 10). The persistence of high concentrations of TCE in the groundwater at these locations is likely due to NAPL migration rather than infiltration-driven leaching, because the TCE concentrations are highest in the deep overburden and bedrock, and the well clusters are positioned along the upgradient site boundary.

MW-14 and MW-15 are located near the southern end of the Facility, a short distance downgradient from the DNAPL recovery wells (see pages 9 and 10 of 10). Chlorobenzene concentrations have remained high and/or fluctuated without a clear trend in most of the wells in these two clusters. TCE concentrations have also tended to remain high and/or fluctuate without a clear trend. In 1997, the TCE level was 7700 µg/L in MW-14D and 940 µg/L in MW-14B. These relative levels were reversed from 1999 to 2002, when TCE peaked at 8080 µg/L in the bedrock. The levels reversed again in April 2004, when TCE was found at 9620 µg/L in the deep overburden and only 2.4 µg/L of TCE were found in the bedrock. At MW-15, TCE concentrations were consistently high in the bedrock, but remained low in the S and D wells. High levels of vinyl chloride (up to 2190 µg/L) have been found in the shallow groundwater at both locations, and toluene concentrations have oscillated in MW-14B and D. The high and/or fluctuating concentrations of chlorobenzene, TCE, and toluene at these locations can be attributed to their proximity to the upgradient DNAPL source. The occurrence of high concentrations of vinyl chloride can be attributed to the biodegradation of TCE along the upper margin of the plume that emanates from the DNAPL source.

Further downgradient from the DNAPL source at MW-12, TCE concentrations were somewhat variable but still remained high at the D and B depths throughout the period of record. Chlorobenzene levels were variable but declining at all depths, and vinyl chloride concentrations were relatively high and variable in the deep overburden (see page 8 of 10).

Metals Analysis

The metals groundwater monitoring data were evaluated in less detail for this five-year review. The analytical results for samples collected in December 1997 and July 2002 were reviewed for arsenic, cadmium, chromium, lead, and selenium, which were listed as groundwater contaminants of concern in the O&M Manual. In the July 2002 sampling event, metals samples were collected from all 53 wells as part of the sampling to be performed every five years. These results were summarized in the *Post-Remediation Groundwater Monitoring Annual Report, July 2002* (M&E 2002) and are presented in Table 6-2. The December 1997 data were also summarized in the July 2002 annual report, but the metals results for many of the wells were listed as "not analyzed".

Table 6-2 shows that many of the metals results for samples collected in 2002 were ND. Some of the 2002 results represented increases from 1997, but the metals concentrations for most wells declined or remained relatively stable over the 5-year period.

The highest concentrations of arsenic for the 2002 sampling event were found in MW-2, and the results increased substantially from those for 1997. The arsenic concentration for MW-2S was 300 µg/L, up from 15 µg/L in 1997. Arsenic results at the other depths at this cluster were 40-70 µg/L in 2002, compared with ND in 1997. Relatively large increases also occurred at MW-1D and B, MW-6S, and MW-15D. At the remaining wells, concentrations were stable or declined.

The highest cadmium level for 2002 (343 µg/L) was found in MW-16M. This result was down from 2140 µg/L in 1997. The cadmium concentration also declined significantly at MW-13D, from 208 µg/L in 1997 to 86.5 µg/L in 2002. The concentration rose at MW-10S, from ND in 1997 to 17.2 µg/L in 2002. Most of the other cadmium levels had decreased since 1997, or they were close to the detection limit.

For chromium, the highest concentration for 2002 (134 µg/L) was detected in MW-2M. The 1997 result was ND. Increases in chromium were also seen at MW-1B, MW-5B, and MW-10D. Concentrations had declined or remained very low at most of the remaining wells, and many results were ND.

Lead was detected at only 10 of the 53 wells in the 2002 sampling event, with the highest results at MW-5 and MW-6. The MW-5S and MW-5D concentrations were 140 µg/L and 110 µg/L, respectively, while both were ND in 1997. The result for MW-6S was also 110 µg/L for 2002, up from 19 µg/L in 1997. The other 2002 results for lead ranged from 10 to 50 µg/L. The most significant decrease in lead levels was observed at MW-14D, where the concentration dropped from 672 µg/L to ND between 1997 and 2002.

Selenium was ND at all wells in the 2002 sampling event except MW-3B, where it was detected at 30 µg/L. In 1997, selenium was ND at all wells except MW-10S (1.3 µg/L) and MW-13B (1.0 µg/L).

The metals results indicate that the concentrations at most wells were relatively low in July 2002, and/or they were declining or relatively stable since December 1997. The only shallow wells that showed significant increases in metals concentrations were MW-2S (arsenic), MW-5S (lead), and MW-6S (arsenic and lead), and MW-10S (cadmium).

In conclusion, the shallow groundwater data indicate that the cap is generally protective in terms of minimizing the leaching of contaminants to the groundwater from on-site vadose zone source areas. On the other hand, the small quantities of TCE-rich DNAPL that have been removed from the recovery wells (see Figure 3-4), and the persistence of high TCE concentrations in source area and down gradient monitoring wells suggests that the recovery wells may not be effective in removing the DNAPL source.

6.5 Site Inspection

A Site inspection was conducted on June 9, 2005, with representatives from CTDEP, the O&M contractor (M&E), and EPA's contractor (TtNUS). The inspection included interviews with representatives from CTDEP, the O&M contractor, and the Property Management Company (Grubb & Ellis); visual inspection of the cap cover; inspection of O&M logbooks; and inspection

of the equipment in the East and West treatment buildings. A Site Inspection Report, including photos, is presented in Appendix C.

Cover Maintenance

The property is kept in good condition. Healthy trees and grass are growing around the perimeter of the Site. There is a regular maintenance program in place to maintain the plantings. When asphalt cracks are discovered, they are sealed as soon as possible. If the stormwater drains are filled with sediment, they are sampled and then cleaned out to prevent buildup and keep the on-site waters moving. Prior to any Site changes, a review of plans and an identification of the issues are determined between the CTDEP and the property owner (and/or tenant) making the request. There is a fourth building under construction on the Site. The building approval process requires plans that identify all components of the engineered control (warning layer, pipes, monitoring wells) as well as the issues inherent to building on a property subject to Environmental Land Use Restrictions (ELUR). The entire Site is subject to an ELUR recorded on the Stratford Land Records (Vol. 1574 pages 011 through 035).

O&M Inspections

CTDEP, their consultants, the Property Manager, and a consultant for the tenants conduct regular O&M inspections and document the results of those inspections on forms kept in notebooks in the western treatment building. While not every inspection form was reviewed during the June 9th, 2005 site visit, a general review of the completed inspection forms was performed. Copies of the blank inspection forms are included in Appendix C.

The O&M Manual does not provide details on how often some of the inspections must occur. In the absence of clear guidance, CTDEP has developed an inspection schedule. Weekly, monthly, quarterly, and annual inspections are conducted. Between the CTDEP staff, their consultant, the Property Manager, and the consultant for the tenants on the property, there appears to be sufficient attention paid to all of the physical attributes of the Site. Although not formally documented, in the event there are problems or issues on the Site that need immediate attention, Ron Curran, CTDEP, is contacted.

System Operations

There are five recovery wells installed at the Site to remove NAPL from the groundwater, but little NAPL has been recovered. Pumps become clogged due to bio-fouling and NAPL emulsion. All five wells were redeveloped, but recovery did not improve. Only one well, RW-3, has recovered NAPL during the 8 years of system operation. The NAPL system has not been operational in a year. The NAPL tank was discovered to be leaking during a routine Site investigation in 2004. A new NAPL tank was installed in June 2005 and the CTDEP anticipates the well will be operational by the fall of 2005.

According to Ron Curran of the CTDEP, NAPL collection system parts are 8 to 10 years old and are wearing out, and decisions need to be made to replace or discard. This is largely a financial consideration for the CTDEP. Recently, the on-site NAPL storage tank began to leak and was replaced on June 9, 2005 at a cost of about $10,000. The identification of whether to repair or replace the tank was made by the CTDEP; however, since a tank that is resistant to stored liquid is critical to the NAPL collection system, CTDEP decided to replace the original tank with the same tank (thereby eliminating the need to retrofit the system to a new tank design). As the on-site systems age, parts will need to be replaced.

The soil gas collection (SGC) and enhanced soil gas collection (ESGC) systems appear to be functioning effectively as discussed below. VOC readings using a PID are taken for soil gas samples from the headers in the SGC and ESGC systems, and vacuum readings are taken from the vacuum monitoring wells. There is back-up in the systems if certain parts break down. No substantive problems were identified by Ron Curran (CTDEP) or Nancy Gaines (CTDEP Contractor) during their interviews.

According to Curran and Gaines, the soil gas concentration results are well below Maximum Allowable Stack Concentration (MASC) limits. Accordingly, the use of carbon to filter out the soil gas contaminants prior to discharge to the atmosphere was determined to be unnecessary and has been discontinued in the SGC system in the western treatment building. The soil gas concentrations from the ESGC system at the eastern treatment building were also below MASC limits, but treatment was needed due to an odor problem from toluene. Because of this, the Thermox unit was replaced with carbon units. CTDEP would like to remove the Thermox unit and is working with EPA on property disposal/transfer requirements.

The changes from the carbon treatment to no treatment prior to discharge, and the change from the Thermox system to carbon treatment were made with the knowledge of the CTDEP and the EPA Project Manager. These changes to on-site treatment systems are documented as amendments to the O&M Manual. Section 12.0 of the O&M Manual indicates the process to be followed. See Appendix E for the changes made to date.

The groundwater monitoring well system also appears to be operating effectively. The system wells are routinely sampled and are visually inspected regularly.

Environmental Land Use Restrictions

Environmental Land Use Restrictions (ELUR) were incorporated into the deed as part of the sale of the property to Wal-mart Real Estate Business Trust, STFD, LLC, and Home Depot U.S.A, Inc. in February 2000. The ELURs prohibit future activities that could result in damage to the engineered control (cap), exposures to the wastes beneath the cap, or interferes with the state obligation to perform O&M activities. Details on the ELUR are presented in Section 4.2.6. The ELUR is in force and still working. Over the past 5 years, CTDEP has issued enforcement actions against Wal-mart for violating the ELUR, although no damages to the engineered control or releases occurred.

Permits

At the time of ROD signing, and at the time of the transfer of O&M, there were no permits issued for the Site. Prior to Site construction, a storm water permit was obtained by the Site contractor; this permit was converted and reissued to the property owner once construction was complete. CTDEP has a permit for discharge of drip leg water from the on site emissions systems. This water is discharged to the sanitary sewer under a general permit issued to CTDEP.

6.6 Interviews

Interviews were conducted with 11 various parties connected to the Site. A list of the individuals interviewed and their titles and organizations is presented in Appendix A. Interviews with Ron Curran (CTDEP), Nancy Gaines (M&E), and Carla Cabral (Grubb & Ellis) were conducted during the June 9, 2005 site inspection. Other than the low recoveries in the NAPL extraction

system, no major problems were identified. Mr. Curran's overall assessment of the remedy was that it is protective; however, he was concerned over the aging of the on-site equipment and the ability to replace aging parts (locating them and paying for them). The interviews are summarized below.

1. Elaine O'Keefe, Director of Health for the Town of Stratford, did not identify any on-going problems with the Site. She said that she had not received any complaints of odor. However, she raised the issue of the DOT plan to add an on/off ramp for Rt 95 near the Site, which would involve digging into contaminated soils and disturbing the cap. She wants to be sure that EPA and/or CTDEP are performing oversight of these activities.

2. The overall impression of Gavin Forrester, Member, Stratford Town Council, was that the OU1 project is a success, and that the project proves that a contaminated site can be put back into productive use. He noted the beautification efforts of the shopping center and the increased employment and creation of a vital retail area. A negative aspect is the groundwater contamination, which continues to impact the off-site residential area. He also said the increase in traffic was difficult for pedestrians on streets around the property, and he suggested allowing buses direct access to the shopping center. He said there was a noise problem for nearby residents due to truck unloading.

3. Mary-Ellen Morhing, Reference Librarian, Stratford Library Association, said that the remedial process had been difficult for the community, but the end product is fine and people no longer dwell on the past. She noted the visual and economic improvements on the property, although the increase in traffic is a negative aspect. She said that EPA keeps the community and the library well informed but suggested providing a new informational document that is more in-depth than the current bulletins. Ms. Morhing expressed concerns about possible long-term health effects for workers at the shopping center, and about guarantees of the long-term monitoring and enforcement of the ELURs.

4. Bob Osborne, Vice President of The Dock, Inc., and member of the Raymark Advisory Committee, expressed dissatisfaction with the remedy's lack of a groundwater cleanup component and the on-going groundwater pollution. He thought that the surface

operation on the property is appropriate, but did not like the tax break received by the shopping center and its request for further tax relief. He questioned why other PRPs have not been successfully pursued to obtain additional funding. He was concerned about the durability of the cap and long-term funding for repair or replacement. He did not feel that he, the community, or the town is well informed and suggested a public meeting or forum following the publication of the Five-Year Review report.

5. Marcia Stewart, President, Protect Your Environment, also objected to the tax break for the shopping center. She said the major community concern is the groundwater contamination and vapor intrusion in the Housatonic Avenue neighborhood. Her overall impression of the OU1 project was that it has created a busy commercial area. A positive aspect noted by Ms. Stewart was that the stores have contributed to local community organizations. She said that she is made aware of issues about the Site by other community residents.

6. Bob Hoffman, of Hoffman Engineering, Inc. (Hoffman), discussed his company's role in operation and maintenance at the site. He said that Hoffman conducts random monthly inspections relative to cap cover maintenance and the ELUR, and coordinates weekly inspections of the cover performed by the three retailers outside their facilities. Monthly logs are kept of outside storage. The company is notified of any spills on the property and documents the clean-up. Hoffman conducts semiannual inspections of the stormwater system and pumps out sediment and oil as necessary. Hoffman also trains maintenance personnel for landscaping, snow-plowing, and parking-lot sweeping on the property, and Mr. Hoffman said he is on-site as needed for personnel training. Reports of the monthly inspections are sent to the property manager, the store managers, and CTDEP. Mr. Hoffman's overall impression of the OU1 site redevelopment is that it is very successful, and he did not see any major problems with the remedy. He said that all construction has been in compliance with the ELURs, and permission to dig below 18 inches was obtained. Pavement cracks have not been a major problem, though cracks occurred near the Webster Bank construction. He said that a crack occurred between the pavement and sidewalk in front of one of the stores due to differential settlement; the crack was repaired. Mr. Hoffman said that pavement and curb repair records are kept by Grubb & Ellis, the property manager. The monitoring well covers around the stores

are checked weekly, and all monitoring well covers are checked monthly. He said that each of the retail stores has a storm water permit.

7. Ronald Jennings, EPA Project Manager, feels that the Site is secure and there are no direct exposures from contamination. There have been issues about the heat waves that exhaust from the treatment building stack (mostly in the winter) and about odors from the CTDEP treatment of effluent from the Thermox or carbon treatment units. CTDEP has been proactive in having many Site walkovers with citizens. Mr. Jennings indicated that CTDEP has kept him verbally informed of Site activities and modifications/changes; the O&M issues are typical routine issues associated with an operating Facility.

8. Ronald Curran, CTDEP Project Manager, and Nancy Gaines, CTDEP Contractor, perform the routine Site inspections as the "system maintainers". The contaminant levels in the monitoring system have decreased and changes in the operation of the systems have been incorporated into routine inspections. The Site is inspected on a weekly, monthly, and quarterly basis as agreed to in their work plan. Most of the inspections are as required on the time schedule shown in the O&M manual, Table 2-1. All inspections are documented in the routine forms shown in Appendix C. These forms are kept in 3-ring notebooks located at the on-site treatment buildings.

9. Carla Cabral is the Property Manager for the Site. She is employed by the Stratford Retailers Condominium Association (property owners). She is on-site once a week and is responsible for on-site maintenance issues such as plantings, snow plowing, and storm system inspections. Further, she recently installed a fence primarily to decrease the amount of debris blowing from the property into town streets and neighboring properties. However, it also helps the flow of motor traffic through designated entrances/exits.

10. According to Bill McCann, Stratford Conservation Officer, the Raymark OU1 project is an outstanding project and has had a positive effect on the community overall. It has increased property values for surrounding real estate. The on-site stores could use additional training for their staff handling hazardous materials and spill prevention.

7.0 TECHNICAL ASSESSMENT

This section provides a technical assessment of the source control remedy that is being implemented at the Site. The source control remedy was determined to be complete by EPA in 1997. The first five-year review in 2000 determined that the remedy was protective of human health and the environment. This five-year review follows the Comprehensive Five-Year Review Guidance (EPA 2001) and was developed to answer the questions shown below.

7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?

Yes, the remedy is functioning as intended by the decision documents; the performance standards are met and the Operation and Maintenance of the remedy is occurring. This is based on a review of site-related documents, data, ARARs, risk assumptions, an evaluation of site conditions determined from a site inspection, and interviews of pertinent stakeholders.

Performance Standards Met? The decontamination, demolition, construction of the impermeable cap, and institutional controls have achieved the remedial objectives of preventing direct exposure (incidental ingestion and dermal contact) to the contaminated soil-waste materials; minimizing leaching of contaminants to groundwater from on site source areas; and preventing human exposure to contaminants in the buildings, process equipment, and subsurface drains. The effective implementation of environmental land use restrictions (ELURs) has prevented exposure to contaminated materials.

Operation and Maintenance Occurring? The operation and maintenance of the cap has, on the whole, been effective. The multi-layer, impermeable cap effectively prevents human contact with contaminated soil/waste and prevents infiltration of rain water that could cause contaminants to leach into the groundwater. The property is well-maintained, with no evidence of erosion, surface cracks, or digging below allowable levels. There is a fence around most of the perimeter of the property to prevent random foot traffic. Site access is primarily through the two entrances/exits to the shopping center. The property has an ELUR that appears to be followed and enforced. This is essential to continue the protective nature of the cap and not pierce the cap's integrity. The CTDEP and its contractor, as well as the property management and its contractor, all conduct inspections of the property on a regular basis (weekly, monthly, quarterly). In addition to the cap, the following components are operational on the Site:

- On site gases released from the waste below the impermeable liner layer that could accumulate and permeate upward through or otherwise disturb the cap are collected and conveyed to the treatment buildings. The collection system appears to function effectively with no major problems. Concentrations of gases conveyed to the western treatment building are below allowable stack limits and so are discharged directly to the atmosphere (change from 2000 five-year review). Concentrations of gases conveyed to the eastern treatment building are also below allowable limits but are treated with carbon prior to discharge due to the odor from toluene (also a change). CTDEP has documentation that these changes in treatment of off-gases are appropriate. See Appendix E for the changes made to the on site gas systems to date.

- The NAPL collection system was not operational at the time of the Site inspection; however, even when it is operational, it is questionable how effective the system is. Four of the five wells have not produced NAPL. The amount of NAPL recovered from the remaining well has been low. Redevelopment of the recovery wells did not improve recoveries. Difficulties have been encountered with the pumping systems due to biofouling and NAPL emulsion. A new pump has been purchased, and additional steps will be taken to attempt to get the system working. It may be, however, that the wells that do not produce NAPL are at locations where NAPL can not be extracted. A review of the validity of continuing to attempt to extract NAPL should be conducted.

- The groundwater monitoring program appears to be operating effectively. Samples are collected and analyzed according to a schedule approved by CTDEP. Most of the trends in contaminant levels are flat or levels are low, but some VOCs of concern show upward trends at some well locations. The currently executed schedule provides for sampling less frequently than the schedule recommended in the O&M Manual. According to Ron Curran, the CTDEP is considering further reducing the frequency of sampling. See Appendix E for the changes made to the groundwater monitoring program.

7.2 Question B: Are the Exposure Assumption, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of the Remedy Selection Still Valid?

Yes, the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection are still valid based on the following:

Changes in Applicable, Relevant, and Appropriate Regulations (ARAR) Standards and To Be Considered (TBCs)

As part of the five-year review, the ARARs and TBCs for the Raymark Facility were reviewed for changes that might affect the protectiveness of the remedy. Attachment/Appendix D presents the tables summarizing the ARARs and TBCs that were presented in the Raymark Facility Final Source Control Feasibility Study Report (April 1995) on two tables and cited by the Record of Decision (ROD). Table 4-2A in the ROD contained the chemical-specific TBCs. (No chemical-specific ARARs were identified for this source-control remedy.) The second table (Table 4-2B) contained the action-specific ARARs and TBCs for the selected remedy. In addition, the ROD identified one location-specific ARAR, the Connecticut Coastal Management Act (Title 22a, Chapter 440, Sections 90-122). As part of this five-year review, ARARs for the Site presented in the ROD were reviewed, and a review of current ARARs was conducted. Due to the fact that source control remedy has been completed, the location and action-specific ARARs that were cited in the ROD have been met.

Many of the ARAR requirements applied to the decontamination, demolition, consolidation, and construction activities that were completed in November 1997. Other requirements apply to the on-going operation and maintenance of the Raymark Facility systems, including the cap and the NAPL removal system. There have been no changes to the ARARs and TBCs and no new standards that affect the protectiveness of the remedy.

One of the TBCs in 1995 was the proposed Regulations of Connecticut State Agencies, Remediation Standard, Sections 22a-133k-1 through 22a-133k-3 (RSRs). The proposed RSRs in 1995 included soil direct exposure standards and were considered in the selection of the remedy. Although the RSRs were not yet promulgated, the remedy met the proposed requirement by preventing direct exposure through the installation of the cap. The regulations took effect without change in July, 1996. The regulations were subsequently updated several

times to approve criteria for additional polluting substances to add or amend criteria. The changes do not affect the protectiveness of the source-control remedy because the cap continues to prevent direct exposure. For this five-year review, there is no regulatory changes that affect the protectiveness of the cap; therefore, the source control remedy continues to be protective of human health and the environment.

Changes in Land Use of the Site and Physical Site Conditions

At the time of the ROD signing, the Site was an abandoned manufacturing plant. Based on the ROD and the subsequent execution of the remedial action, the Site was transformed from a Brownfield to an operating shopping center. The placement of the cap was done in concert with this transformation and as such accounted for the change in use by pre-loading soils, installing building pods, and laying out the perimeter fencing and plantings. Today the cap remains in place essentially as it was installed 8 years ago.

Changes in Exposure pathways, Toxicity, and Other Contaminant Characteristics

No ecological targets were identified during the baseline risk assessment and none were identified during the five-year review; therefore monitoring of ecological targets is not necessary. No weather-related events have affected the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

7.3 Question C: Has any Other Information Come to Light that Could Call into Question the Protectiveness of the Remedy?

No new information has become available that could impact the protectiveness of the remedy.

7.4 Technical Assessment Summary

Based on the data reviewed, observations from the Site inspection, and the interviews conducted, the remedy is functioning as intended by the ROD. The source control remedy (cap) is complete and has been confirmed that the remedy is functioning as designed and remains protective of human health and the environment. The frequent Site inspections by CTDEP, its consultants, the property managers, and its consultants, continually evaluate the effectiveness of the cap, and its attendant systems (on-site gas removal, NAPL removal, and groundwater

sampling). The effective implementation of institutional controls (ELURs) has continued to ensure the integrity of the cap by restricting on-site digging. Land use has changed at the Site since the ROD was signed, but the changes were anticipated in the design of the remedy and has not changed any exposure routes.

8.0 ISSUES

The issues identified during this five-year review primarily relate to the State's O&M activities. The ROD requires that O&M activities be reassessed, at a minimum, with every five-year review. As discussed above, the current O&M activities and schedules are developed by CTDEP in reaction to the on-site conditions for the Site. These issues and their progress were presented in greater detail in Section 5.0. None of the issues below impact the protectiveness of the remedy; they are preventative in nature and are housekeeping items.

Issues	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Issue 1: A written contingency plan has not been prepared as required under 40 CFR 265 Subpart D; although there is an "informal" chain of command that ends with the CTDEP on-site Project Manager (Ron Curran) in the event there are problems or issues on the Site that need immediate attention. It is recommended that CTDEP should develop a contingency plan.	N	Y
Issue 2: A groundwater sampling plan and the associated groundwater monitoring are not being followed/performed as comprehensively as required in 40 CFR Subpart F nor is groundwater sampling being performed on the schedule identified in the state/EPA superfund contract. CTDEP has recently provided documentation of their current sampling program for inclusion into the O&M manual for the Site (see Appendix E). This revised sampling should be reviewed and concurred with by EPA.	N	N
Issue 3: Only one recovery well, RW-3 is actually removing NAPL. EPA/CTDEP should conduct an assessment to determine whether pumping RW-3 should be discontinued or whether continued efforts to improve recovery would be useful. Significant on-site resources are used in sampling NAPL and the utility of continuing this effort should be evaluated.	N	N

Issues	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Issue 4: Soil gas from the SGC and ESGC systems are not being treated as specified in the O&M Manual. CTDEP states that the contaminant concentrations in influent soil gas are below treatment standards. CTDEP has recently provided the documentation of the changes to the O&M manual for the Site (see Appendix E). These revised changes should be reviewed and concurred with by EPA.	N	N

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

The primary recommendation is that EPA and CTDEP document all changes to sampling and on-site systems as amendments to the O&M Manual. Section 12.0 of the O&M Manual indicates the process to be followed. This is critical as EPA has spent millions of dollars to cleanup the Raymark Site and bears responsibility to ensure that the Site, and its monitoring, remains intact. The State is responsible for the operation and maintenance of the Site. The approach for O&M should be agreed on between EPA and the State.

It may be advisable for EPA and CTDEP to meet to exchange goals and expectations for the Site as it has been 10 years since the ROD has been written, 8 years since the Operation and Maintenance Manual was written, the Site managers have changed over the years, and the Site has been redeveloped in the past 3 years. The expectations of a number of the on-site systems have changed over this time period. CTDEP has modified its approach as was assumed would happen in the O&M Manual; however, an on-going in depth look at the validity of the on-site systems and associated sampling processes should be routinely conducted. In particular, discussions should focus on the effectiveness and efficiency of the NAPL system and changes in the emissions collection sampling. The final decision on area-wide groundwater cleanup will influence future groundwater decisions at OU1.

Recommendations and follow-up actions for OU1 are presented in the table below.

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
A written contingency plan has not been prepared as required under 40 CFR 265 Subpart D; although there is an “informal” chain of command that ends with the CTDEP on-site Project Manager (Ron Curran) in the event there are problems or issues on the Site that need immediate attention.	Develop a contingency plan.	State	EPA/ State	9/1/06	N	Y

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
A groundwater sampling plan and the associated groundwater monitoring are not being followed/performed as comprehensively as required in 40 CFR Subpart F nor is groundwater sampling being performed on the schedule identified in the state/EPA superfund contract.	Document the current sampling program for inclusion into the O&M manual for the Site	State	EPA	9/1/06	N	N
Only one recovery well, RW-3 is actually removing NAPL.	An assessment to determine whether pumping RW-3 should be discontinued or whether continued efforts to improve recovery would be useful.	EPA/State	EPA/ State	9/1/07	N	N
Soil gas from the SGC and ESGC systems are not being treated as specified in the O&M Manual. CTDEP states that the contaminant concentrations in influent soil gas are below treatment standards. CTDEP has recently provided the documentation of the changes to the O&M manual for the Site	Changes should be reviewed and concurred with by EPA.	EPA	EPA	9/1/06	N	N

10.0 PROTECTIVENESS STATEMENT

The remedy at OU1 is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled.

11.0 NEXT REVIEW

The third five-year review for Raymark OU1 is scheduled to be conducted in 2010. This review will be required as hazardous wastes remain at the Site above levels for unlimited use and unrestricted exposure.

TABLES

TABLE 6-1
GROUNDWATER MONITORING DATA FOR SELECTED VOCS
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

Well			VOC	Sample Concentration (µg/L)						
				Date of Sampling Event						
				Dec-97	Aug-99	Apr-01	Jul-02	Apr-03	Apr-04	Oct-04
MW	1	S	Chlorobenzene	ND	ND	ND	ND	ND	ND	ND
MW	1	S	1,1,1-TCA	ND	ND	ND	ND	ND	ND	ND
MW	1	M	Chlorobenzene	30	34	535	226	698	ND	NS
MW	1	M	1,1,1-TCA	165	52	10.5	ND	ND	ND	NS
MW	1	D	Chlorobenzene	ND	4.5	7.7	10.2	7	1.8	NS
MW	1	D	1,1,1-TCA	ND	ND	9.8	ND	ND	2.7	NS
MW	1	B	Chlorobenzene	ND	ND	1.2	ND	0.7	ND	NS
MW	1	B	1,1,1-TCA	ND	ND	12.8	ND	1.2	ND	NS
MW	2	S	1,1-DCE	2	ND	ND	ND	ND	3.6	ND
MW	2	S	1,1,1-TCA	17	ND	ND	ND	ND	10.9	ND
MW	2	S	TCE	ND	ND	ND	ND	ND	ND	ND
MW	2	M	1,1-DCE	720	826	517	393	811	549	NS
MW	2	M	1,1,1-TCA	1700	1020	1750	2350	1980	2295	NS
MW	2	M	TCE	ND	ND	ND	ND	ND	ND	NS
MW	2	D	1,1-DCE	6500	24800	14700	17600	9400	469	NS
MW	2	D	1,1,1-TCA	80000	178000	264000	244500	120550	6280	NS
MW	2	D	TCE	ND	152	ND	322	ND	155	NS
MW	2	B	1,1-DCE	42000	55300	32200	30500	28100	26000	NS
MW	2	B	1,1,1-TCA	185000	129000	91200	74300	75900	85800	NS
MW	2	B	TCE	ND	192	153	297	ND	320	NS
MW	3	S	Chlorobenzene	ND	7400	7740	6590	4040	972	NS
MW	3	S	1,1-DCE	ND	NR	NR	4.8	ND	ND	NS
MW	3	S	Toluene	6100	1450	284	ND	ND	ND	NS
MW	3	S	1,1,1-TCA	ND	ND	29.3	ND	ND	ND	NS
MW	3	D	Chlorobenzene	ND	240	4390	5450	6400	4500	NS
MW	3	D	1,1-DCE	310	ND	ND	15	ND	ND	NS
MW	3	D	Toluene	ND	ND	1.2	ND	ND	ND	NS
MW	3	D	1,1,1-TCA	750	350	64.2	2.8	ND	ND	NS
MW	3	B	Chlorobenzene	ND	15.6	5.9	31.1	38	58.3	NS
MW	3	B	1,1-DCE	9.0	ND	ND	39.4	17.9	6.3	NS
MW	3	B	Toluene	ND	ND	ND	ND	ND	ND	NS
MW	3	B	1,1,1-TCA	4.0	ND	61.5	7.6	6.1	2.1	NS
MW	4	S	Chlorobenzene	ND	1270	ND	107	ND	21.1	21.2
MW	4	S	Toluene	170000	77800	34100	44800	17100	7420	1760
MW	4	S	1,1,1-TCA	3900	ND	ND	ND	ND	ND	ND
MW	4	S	TCE	3900	ND	ND	ND	ND	ND	ND
MW	4	D	Chlorobenzene	ND	1140	1380	1400	575	2540	NS
MW	4	D	Toluene	ND	ND	ND	30.4	ND	ND	NS
MW	4	D	1,1,1-TCA	ND	ND	ND	ND	ND	ND	NS
MW	4	D	TCE	ND	ND	ND	ND	ND	2.2	NS
MW	4	B	Chlorobenzene	ND	16.9	160	28.5	ND	2	NS
MW	4	B	Toluene	ND	ND	ND	ND	ND	ND	NS
MW	4	B	1,1,1-TCA	ND	ND	ND	ND	ND	ND	NS
MW	4	B	TCE	ND	ND	ND	5.4	ND	ND	NS

TABLE 6-1 (cont.)
GROUNDWATER MONITORING DATA FOR SELECTED VOCS
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

Well			VOC	Sample Concentration (µg/L)						
				Date of Sampling Event						
				Dec-97	Aug-99	Apr-01	Jul-02	Apr-03	Apr-04	Oct-04
MW	5	S	1,1-DCE	ND	ND	ND	ND	ND	ND	NS
MW	5	S	1,1,1-TCA	ND	ND	ND	ND	ND	ND	NS
MW	5	S	TCE	ND	ND	ND	ND	ND	ND	NS
MW	5	M	1,1-DCE	ND	ND	ND	ND	ND	ND	NS
MW	5	M	1,1,1-TCA	5.0	ND	1	ND	ND	ND	NS
MW	5	M	TCE	ND	ND	ND	ND	ND	ND	NS
MW	5	D	1,1-DCE	4.5	NA	NA	ND	ND	2.4	NS
MW	5	D	1,1,1-TCA	14.5	10.1	1.1	ND	ND	ND	NS
MW	5	D	TCE	125	ND	ND	3.9	3.5	1.6	NS
MW	5	B	1,1-DCE	120	ND	ND	76.5	5.4	8.8	NS
MW	5	B	1,1,1-TCA	460	254	98	153	5	22.9	NS
MW	5	B	TCE	770	ND	ND	311	35.7	94.2	NS
MW	6	S	Toluene	ND	1.9	ND	ND	2.3	928	NS
MW	6	S	TCE	ND	ND	ND	ND	ND	ND	NS
MW	6	M	Toluene	ND	ND	0.7	ND	ND	1.1	ND
MW	6	M	TCE	2.0	ND	ND	ND	ND	ND	ND
MW	6	D	Toluene	ND	ND	ND	ND	ND	0.7	NS
MW	6	D	TCE	1.0	ND	1	1.3	ND	0.6	NS
MW	6	B	Toluene	ND	NS	1.1	ND	ND	141	NS
MW	6	B	TCE	545	NS	95	38.1	266	43.1	NS
MW	7	S	Chlorobenzene	12000	20400	338	8140	23.8	138	244
MW	8	S	1,1-DCE	ND	ND	7.2	9.7	4.6	4.3	NS
MW	8	S	1,1,1-TCA	710	192	165	200	102	96.2	NS
MW	8	S	TCE	ND	ND	4.7	4.5	2.9	1.5	NS
MW	8	D	1,1-DCE	20	ND	11.3	13.2	10.4	7.5	NS
MW	8	D	1,1,1-TCA	380	172	128	194	93.8	84.3	NS
MW	8	D	TCE	NR	22	60.2	55.6	33	20.8	NS
MW	8	B	1,1-DCE	95	798	18.2	20.5	51.9	27.1	NS
MW	8	B	1,1,1-TCA	200	1340	24.6	27.1	45.9	19.6	NS
MW	8	B	TCE	290	1910	44.1	64.7	111	58.4	NS
MW	9	S	Chlorobenzene	ND	422	3.7	2.4	ND	ND	2.4
MW	9	S	1,1-DCE	93.0	ND	111	81.6	188	243	70
MW	9	S	Toluene	ND	798	ND	ND	ND	ND	ND
MW	9	S	1,1,1-TCA	1600	1820	2110	1640	1210	2000	624
MW	9	S	TCE	37.0	82	39.3	25.4	21.2	61.1	6.2
MW	9	S	Vinyl Chloride	49.0	ND	603	645	1110	892	218
MW	9	D	Chlorobenzene	ND	ND	3.3	3.3	ND	ND	3.5
MW	9	D	1,1-DCE	300	104	34.9	72.2	ND	145	94.8
MW	9	D	Toluene	ND	ND	ND	ND	ND	ND	ND
MW	9	D	1,1,1-TCA	3000	1620	394	1110	527	1680	1040
MW	9	D	TCE	1300	406	21.4	75.3	28.2	87.4	101
MW	9	D	Vinyl Chloride	ND	92	80.4	239	203	1130	213
MW	10	S	TCE	7.0	89.2	13.2	71.3	60.3	88.5	38.4
MW	10	M	TCE	340	402	339	220	342	285	NS
MW	10	D	TCE	555	824	1285	892	1060	1030	NS

TABLE 6-1 (cont.)
GROUNDWATER MONITORING DATA FOR SELECTED VOCS
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

Well			VOC	Sample Concentration (µg/L)						
				Date of Sampling Event						
				Dec-97	Aug-99	Apr-01	Jul-02	Apr-03	Apr-04	Oct-04
MW	10	B	TCE	790	492	666	854	1420	932	NS
MW	11	S	TCE	NR	2.2	8.2	ND	ND	ND	NS
MW	11	S	Vinyl Chloride	57	175	13.8	120	ND	28.8	NS
MW	11	M	TCE	NR	300	98.3	51.5	ND	12.7	NS
MW	11	M	Vinyl Chloride	9.0	6.5	1.8	ND	ND	ND	NS
MW	11	D	TCE	1400	1340	576	457	3.2	158	NS
MW	11	D	Vinyl Chloride	ND	9.9	5.2	ND	ND	ND	NS
MW	11	B	TCE	1500	60.6	36.5	9.6	NS	NS	NS
MW	11	B	Vinyl Chloride	3.0	ND	ND	ND	NS	NS	NS
MW	12	S	Chlorobenzene	170	170	89.5	30.4	60.1	78.2	58.6
MW	12	S	1,1,1-TCA	1.0	ND	ND	110	ND	ND	ND
MW	12	S	TCE	ND	ND	5.9	4100	1.3	ND	ND
MW	12	S	Vinyl Chloride	60	6.1	39.3	ND	59	11.9	9.9
MW	12	D	Chlorobenzene	ND	220	54	92.6	75.6	97.6	NS
MW	12	D	1,1,1-TCA	NR	ND	ND	119	84.4	56.6	NS
MW	12	D	TCE	4150	5800	4430	8560	4680	3630	NS
MW	12	D	Vinyl Chloride	330	250	49.9	106	90.2	174	NS
MW	12	B	Chlorobenzene	ND	102	ND	18.9	24.3	10.8	NS
MW	12	B	1,1,1-TCA	NR	ND	ND	81.8	72.5	25.8	NS
MW	12	B	TCE	3200	3480	85.1	4370	2980	2350	NS
MW	12	B	Vinyl Chloride	97.0	88	ND	14.2	14.2	4	NS
MW	13	S	Chlorobenzene	ND	ND	ND	ND	ND	ND	ND
MW	13	S	TCE	70	16.6	30.6	37.2	27.2	30.1	65.8
MW	13	M	Chlorobenzene	ND	ND	14.2	ND	ND	ND	NS
MW	13	M	TCE	25	38.3	45.8	34.5	42.7	34.8	NS
MW	13	D	Chlorobenzene	ND	5.2	ND	ND	ND	ND	ND
MW	13	D	TCE	840	562	194	ND	149	111	134
MW	13	B	Chlorobenzene	ND	89.6	52	74.8	84.1	165	NS
MW	13	B	TCE	2000	5960	3260	3300	4240	6500	NS
MW	14	S	Chlorobenzene	700	1020	888	949	963	894	NS
MW	14	S	Toluene	32	34	11.4	17.1	78.8	7.4	NS
MW	14	S	1,1,1-TCA	NR	ND	ND	ND	ND	ND	NS
MW	14	S	TCE	120	26.9	9.4	ND	21.3	60.8	NS
MW	14	S	Vinyl Chloride	680	2190	1165	280	69.5	800	NS
MW	14	D	Chlorobenzene	160	81.2	ND	ND	112	252	NS
MW	14	D	Toluene	350	ND	ND	ND	246	609	NS
MW	14	D	1,1,1-TCA	NR	ND	ND	1.2	ND	110	NS
MW	14	D	TCE	7700	ND	2.2	18.8	4740	9620	NS
MW	14	D	Vinyl Chloride	27	ND	ND	ND	ND	43.7	NS
MW	14	B	Chlorobenzene	49	70	169	213	8.3	ND	NS
MW	14	B	Toluene	3	166	401	597	ND	ND	NS
MW	14	B	1,1,1-TCA	NR	ND	ND	148	ND	ND	NS
MW	14	B	TCE	940	6800	6190	8080	240	2.4	NS
MW	14	B	Vinyl Chloride	6	ND	17.1	ND	ND	ND	NS

TABLE 6-1 (cont.)
GROUNDWATER MONITORING DATA FOR SELECTED VOCS
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

Well			VOC	Sample Concentration (µg/L) Date of Sampling Event						
				Dec-97	Aug-99	Apr-01	Jul-02	Apr-03	Apr-04	Oct-04
MW	15	S	Chlorobenzene	280	40	96	18.0	ND	NS	1.6
MW	15	S	TCE	ND	ND	1.2	ND	ND	NS	8.3
MW	15	S	Vinyl Chloride	190	ND	ND	ND	ND	NS	ND
MW	15	D	Chlorobenzene	190	1.5	212	234	103	451	NS
MW	15	D	TCE	4.0	1.6	50.6	21.2	7.6	10.4	NS
MW	15	D	Vinyl Chloride	95	ND	14.8	6.6	2.6	3.2	NS
MW	15	B	Chlorobenzene	220	282	357	135	87.4	50.2	NS
MW	15	B	TCE	1200	848	1080	681	476	1120	NS
MW	15	B	Vinyl Chloride	19.0	ND	19.3	8.1	ND	4	NS
MW	16	S	1,1-DCE	ND	ND	ND	ND	ND	ND	NS
MW	16	S	1,1,1-TCA	4	3	3	ND	1.1	1.4	NS
MW	16	S	TCE	6	3	2	ND	ND	1.5	NS
MW	16	M	1,1-DCE	71	41	168	163	72	56.4	NS
MW	16	M	1,1,1-TCA	200	270	399	393	135	106	NS
MW	16	M	TCE	59	61.9	57.8	45.8	35.4	24.1	NS
MW	16	D	1,1-DCE	94	76.1	69.8	205	209	125	NS
MW	16	D	1,1,1-TCA	410	180	168	386	411	267	NS
MW	16	D	TCE	2400	2200	1720	944	1160	874	NS
MW	16	B	1,1-DCE	3300	4560	2720	1400	2040	699	NS
MW	16	B	1,1,1-TCA	12000	9650	4880	2640	3080	1340	NS
MW	16	B	TCE	560	552	340	135	312	106	NS

Sources: Post-Remediation Groundwater Monitoring Annual Report - April 2004 (Metcalf & Eddy, June 2004) (Dec-97 - Apr-04 data) and Post-Remediation Groundwater Monitoring Semiannual Report - October 2004 (Metcalf & Eddy, March 2005) (Oct-04 data)

Note: Data for chlorobenzene, 1,1 - DCE, toluene, 1,1,1-TCA, TCE, and vinyl chloride are included in this table for a given well cluster if at least one result >100 ug/L was reported from these sampling events for the VOC from that well cluster.

Note: Duplicate and triplicate results are presented above as mean averages.

ND - Not detected.

NS - Not sampled.

NR - Not reported; entry was left blank in source document.

TABLE 6-2
GROUNDWATER MONITORING DATA - ANALYTICAL RESULTS FOR SELECTED METALS
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

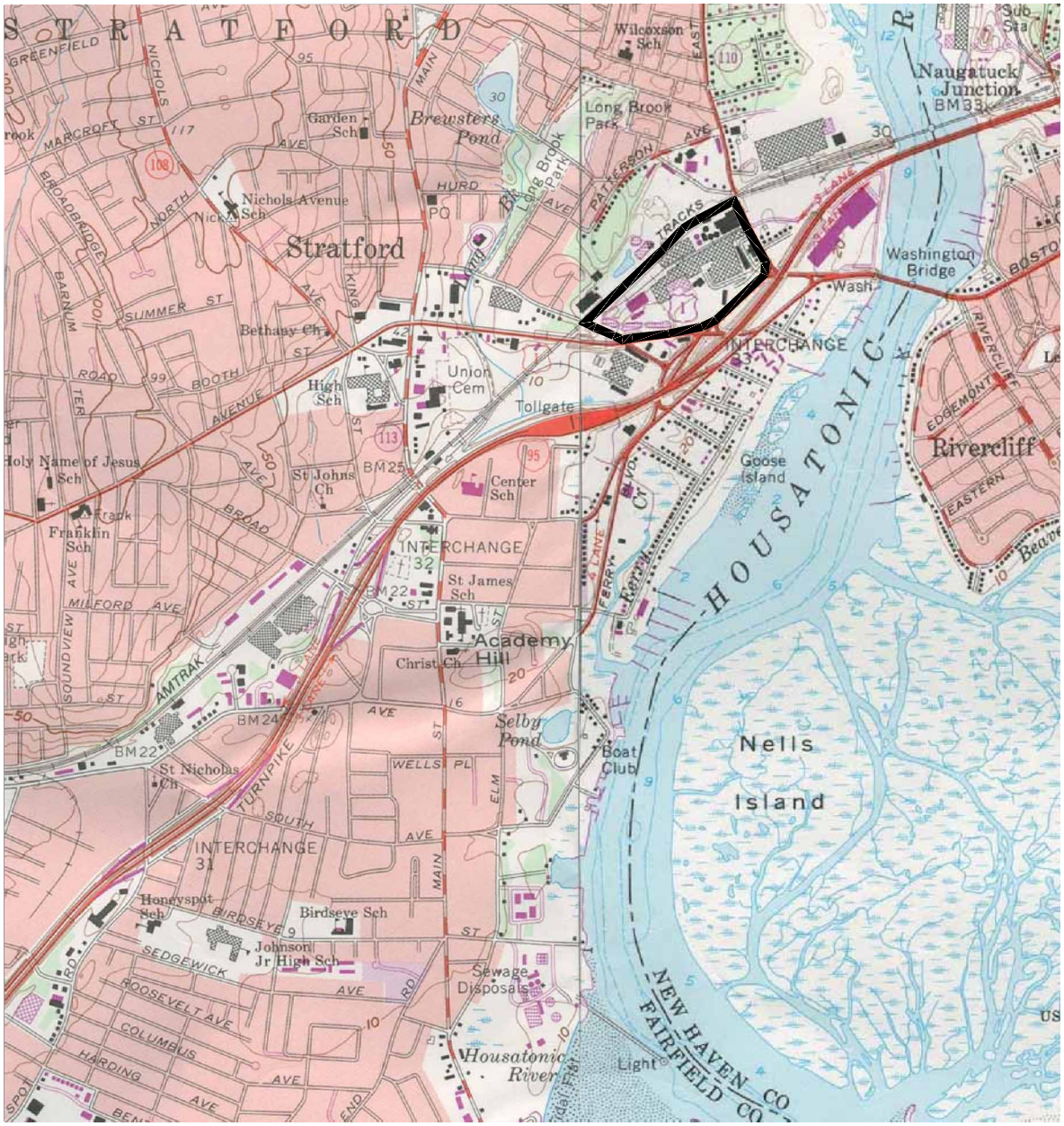
Well Cluster	Well Depth	Sample Concentration (ug/L)									
		Arsenic		Cadmium		Chromium		Lead		Selenium	
		Sampling Date		Sampling Date		Sampling Date		Sampling Date		Sampling Date	
		Dec-97	Jul-02	Dec-97	Jul-02	Dec-97	Jul-02	Dec-97	Jul-02	Dec-97	Jul-02
MW-1	S	7.1	ND	ND	ND	6.8	ND	12.7	ND	ND	ND
	M	ND	ND	3	5.3	ND	3	ND	ND	ND	ND
	D	ND	40	26.8	9.7	6.3	7	ND	ND	ND	ND
	B	ND	60	16.9	5	27.9	73	ND	20	ND	ND
MW-2	S	15	300	ND	ND	8	ND	10.1	ND	ND	ND
	M	ND	40	13.5	11.8	ND	134	ND	ND	ND	ND
	D	ND	60	52	12.7	75.1	3	61.7	30	ND	ND
	B	ND	70	51.6	11.2	ND	2	ND	30	ND	ND
MW-3	S	43	40	ND	0.5	ND	7	ND	ND	ND	ND
	D	32.8	30	ND	0.5	ND	ND	ND	ND	ND	ND
	B	ND	ND	ND	0.4	ND	ND	ND	ND	ND	30
MW-4	S	ND	ND	ND	ND	5.4	ND	ND	ND	ND	ND
	D	34.6	60	ND	0.5	ND	ND	ND	ND	ND	ND
	B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5	S	ND	30	ND	0.5	ND	ND	ND	140	ND	ND
	M	39.8	40	ND	0.6	ND	ND	ND	20	ND	ND
	D	2.2	30	ND	0.5	ND	ND	ND	110	ND	ND
	B	ND	ND	ND	0.4	7.2	52	ND	50	ND	ND
MW-6	S	ND	55	ND	0.3	197	2	19.3	110	ND	ND
	M	ND	ND	ND	ND	ND	2	ND	ND	ND	ND
	D	ND	ND	ND	0.6	ND	ND	ND	ND	ND	ND
	B	9.5	ND	ND	0.4	47.7	14	ND	ND	ND	ND
MW-7	S	63.5	60	ND	0.6	ND	ND	ND	ND	ND	ND
MW-8	S	16.8	ND	ND	ND	16.1	ND	45.4	ND	ND	ND
	D	31.2	ND	ND	0.2	ND	ND	ND	ND	ND	ND
	B	ND	ND	ND	ND	26.2	9	ND	ND	ND	ND
MW-9	S	33.5	50	ND	ND	ND	ND	ND	ND	ND	ND
	D	4.9	40	ND	ND	ND	7	ND	ND	ND	ND
MW-10	S	3.1	ND	ND	17.2	ND	3	ND	ND	1.3	ND
	M	ND	ND	ND	0.7	5.3	3	ND	ND	ND	ND
	D	2.75	ND	ND	0.4	ND	34	ND	ND	ND	ND
	B	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 6-2 (cont.)
GROUNDWATER MONITORING DATA - ANALYTICAL RESULTS FOR SELECTED METALS
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

Well Cluster	Well Depth	Sample Concentration (ug/L)									
		Arsenic		Cadmium		Chromium		Lead		Selenium	
		Sampling Date		Sampling Date		Sampling Date		Sampling Date		Sampling Date	
		Dec-97	Jul-02	Dec-97	Jul-02	Dec-97	Jul-02	Dec-97	Jul-02	Dec-97	Jul-02
MW-11	S	32.2	30	ND	ND	ND	ND	11.7	ND	ND	ND
	M	ND	ND	25.4	1.2	ND	4	ND	ND	ND	ND
	D	ND	ND	26.3	12.2	ND	11	ND	20	ND	ND
	B	ND	ND	ND	0.3	35.4	4	ND	ND	ND	ND
MW-12	S	5.4	ND	ND	13	ND	ND	ND	ND	ND	ND
	D	ND	ND	10.95	9.2	ND	2	ND	ND	ND	ND
	B	ND	ND	3.2	10.2	15.8	ND	ND	ND	ND	ND
MW-13	S	1.8	ND	44.7	5.2	21.7	3	ND	ND	ND	ND
	M	ND	ND	ND	0.2	ND	4	ND	ND	ND	ND
	D	ND	ND	208	86.5	ND	4	ND	ND	ND	ND
	B	ND	ND	ND	ND	ND	2	ND	ND	1.0	ND
MW-14	S	39.8	40	ND	2.4	ND	ND	ND	ND	ND	ND
	D	ND	ND	8.8	ND	50.8	6	672	ND	ND	ND
	B	1.7	30	ND	6.1	18.6	25	ND	ND	ND	ND
MW-15	S	14	30	ND	0.5	ND	ND	ND	10	ND	ND
	D	25	110	ND	0.4	ND	ND	ND	ND	ND	ND
	B	ND	ND	ND	0.5	ND	ND	ND	ND	ND	ND
MW-16	S	ND	ND	43.7	9.4	ND	6	ND	ND	ND	ND
	M	ND	ND	2140	343	ND	14	ND	ND	ND	ND
	D	ND	ND	ND	0.6	35.8	ND	ND	ND	ND	ND
	B	1.2	ND	ND	0.4	142	44	ND	ND	ND	ND

Source, 2002 Data: Former Raymark Industries Site Post-Remediation Groundwater Monitoring Annual Report - July 2002 (M&E, 2002)
Source, 1997 Data: EPA Raymark Stratford Database
Note: The results above for 2002 were reported in units of mg/L in the source document and have been adjusted (multiplied by 1,000) to units of ug/L.
ND - Not detected

FIGURES

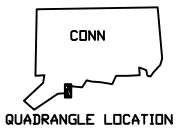


BASEMAP: PORTIONS OF THE FOLLOWING U.S.G.S. QUADRANGLE MAPS: BRIDGEPORT, CONN., 1970 (PHOTOREVISED: 1984) AND MILFORD, CONN., 1960 (PHOTOREVISED: 1984), SCALE ALTERED FOR CLARITY

OUTLINE OF OU1 RAYMARK INSUSTRIES, INC. SITE

0 1/2 1 MILE

1000 0 1000 2000 3000 4000 5000 FEET



QUADRANGLE LOCATION

SITE LOCUS – OU1 FACILITY

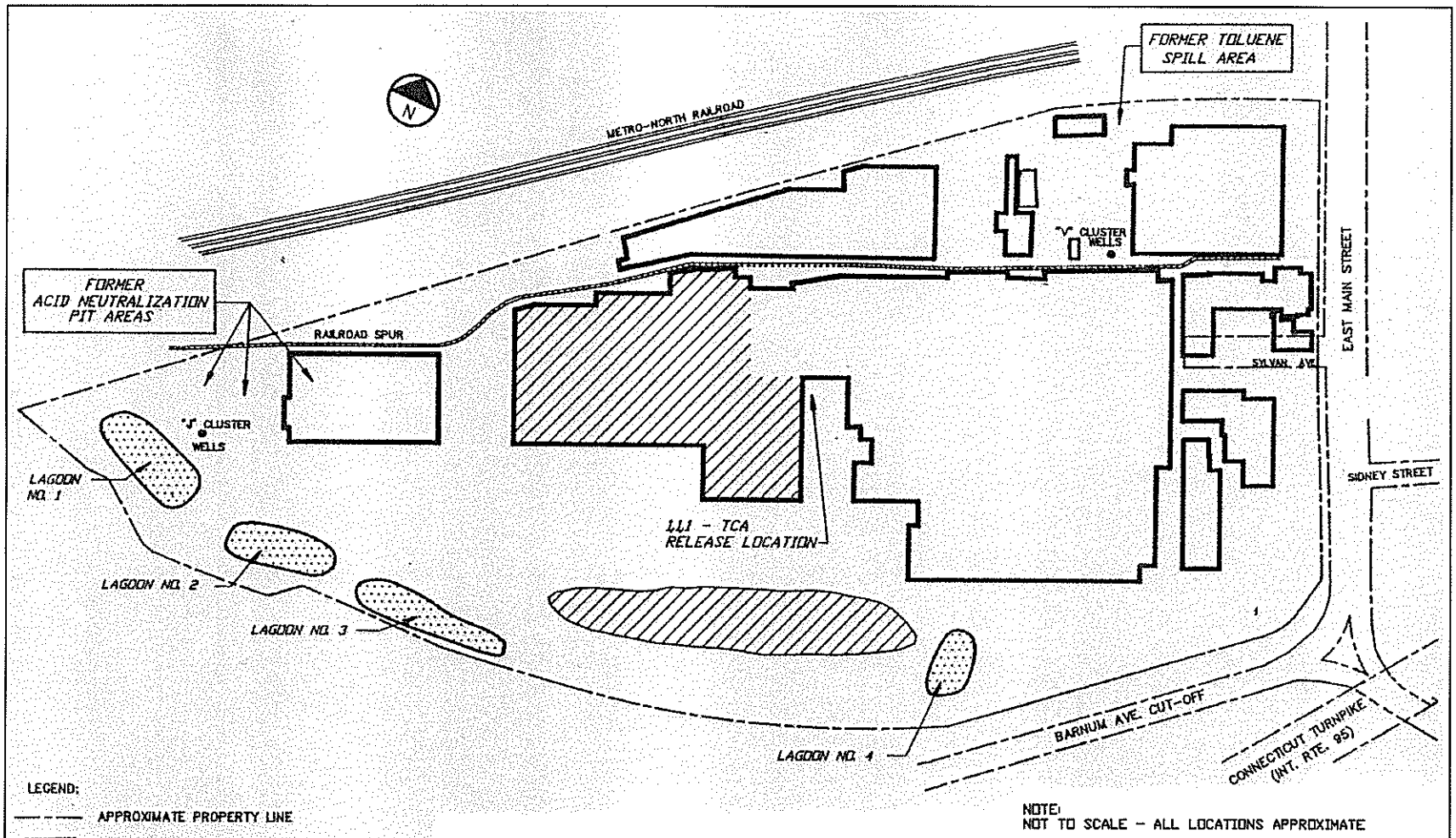
5–YEAR REVIEW

RAYMARK – STRATFORD, CONNECTICUT

FIGURE 1–1

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
PROJECT MANAGER:	H. FORD	DATE:	AUGUST 9, 2005
SCALE:	AS SHOWN	ACAD NAME:	DWG\00127\0600\FIG_1-1.DWG

TETRA TECH NUS, INC.
55 Jonspin Road Wilmington, MA 01887
(978)658–7899



FORMER FACILITY FEATURES			
5-YEAR REVIEW			
RAYMARK - STRATFORD, CONNECTICUT			
DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	L. SEYDEWITZ	DATE:	AUGUST 9, 2005
SCALE:	NOT TO SCALE	FILE NO.:	DWG\00127\0600\FIG_3-1.DWG

FIGURE 3-1

TETRA TECH NUS, INC.
55 Jonspin Road Wilmington, MA 01887
(978)658-7899

N

LEGEND

	RAYMARK FACILITY	OPERABLE UNIT 1
	UPPER FERRY CREEK AND WETLANDS	OPERABLE UNIT 3
	RAYBESTOS MEMORIAL FIELD	OPERABLE UNIT 4
	SHORE ROAD AREA	OPERABLE UNIT 5
	ADDITIONAL PROPERTIES	OPERABLE UNIT 6
	LOWER FERRY CREEK, SELBY POND AND HOUSATONIC RIVER WETLANDS	OPERABLE UNIT 7
	BEACON POINT BOAT LAUNCH AREA AND ELM STREET WETLANDS	OPERABLE UNIT 8
	SHORT BEACH PARK AND STRATFORD LANDFILL	OPERABLE UNIT 9
	GROUNDWATER	OPERABLE UNIT 2

NOTES:
1) ALL LOCATIONS AND BOUNDARIES TO BE CONSIDERED APPROXIMATE
2) PLAN NOT TO BE USED FOR DESIGN

500 0 500 1000 1500 2000 Feet

RAYMARK OPERABLE UNITS

FIVE-YEAR REVIEW REPORT

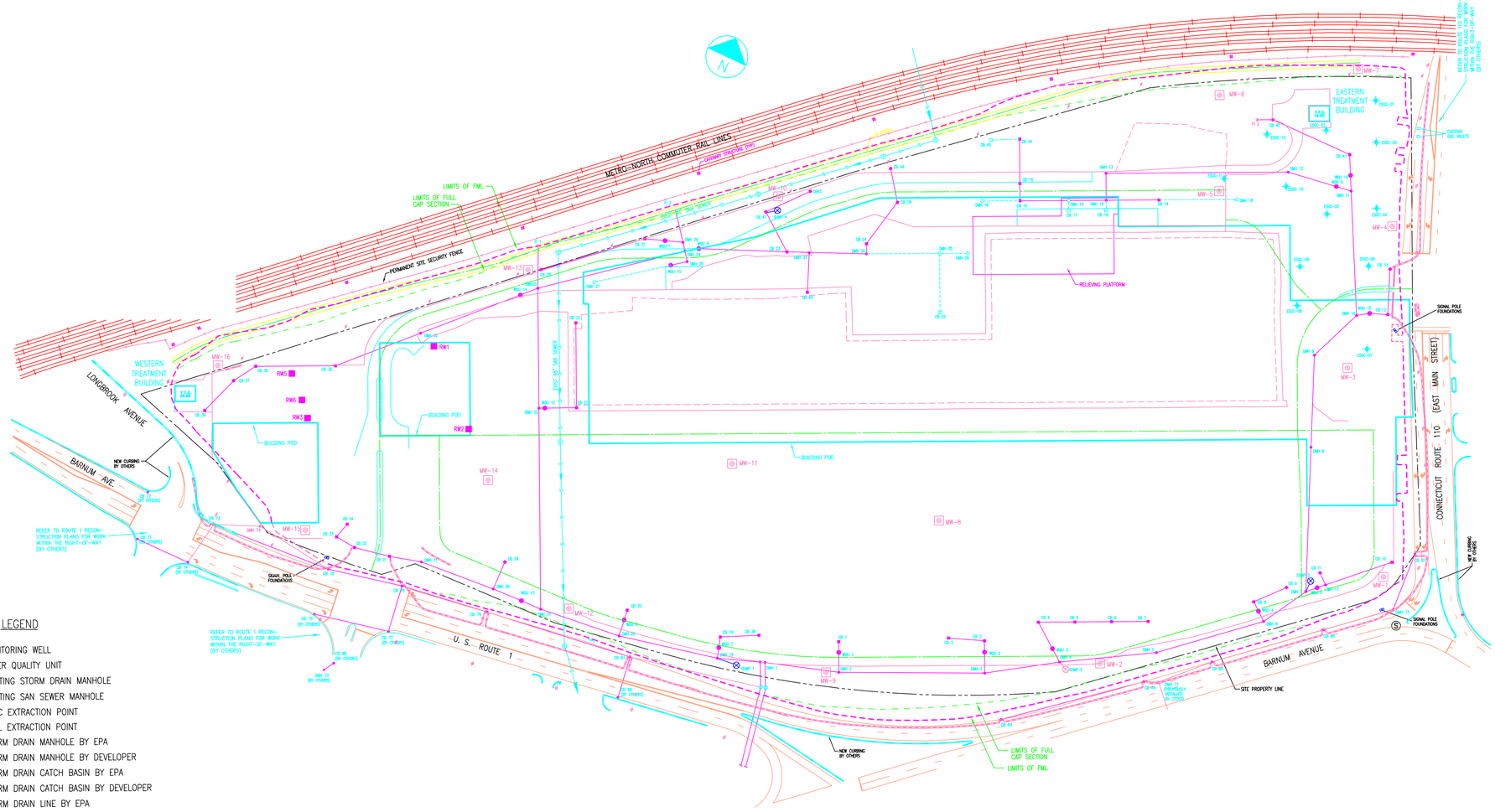
RAYMARK INDUSTRIES, INC. SUPERFUND SITE
STRATFORD, CONNECTICUT

DRAWN BY: L. SEYDEWITZ | DATE: AUGUST 2005

SCALE: AS SHOWN | FILE: ...\ALLRAY.APR

FIGURE 3-2

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899



LEGEND

- MW-6 MONITORING WELL
- WQU 8 WATER QUALITY UNIT
- EXISTING STORM DRAIN MANHOLE
- EXISTING SAN SEWER MANHOLE
- ESGC-02 ESGC EXTRACTION POINT
- RW5 NAPL EXTRACTION POINT
- DMH 2 STORM DRAIN MANHOLE BY EPA
- DMH 15 STORM DRAIN MANHOLE BY DEVELOPER
- CB 23 STORM DRAIN CATCH BASIN BY EPA
- CB 45 STORM DRAIN CATCH BASIN BY DEVELOPER
- STORM DRAIN LINE BY EPA
- STORM DRAIN LINE BY DEVELOPER
- TRAFFIC SIGNAL
- RELOCATED UTILITY POLE
- EXISTING UTILITY POLE
- FI1 FIELD INLET
- SUMP 2 SUMP

NOTES:

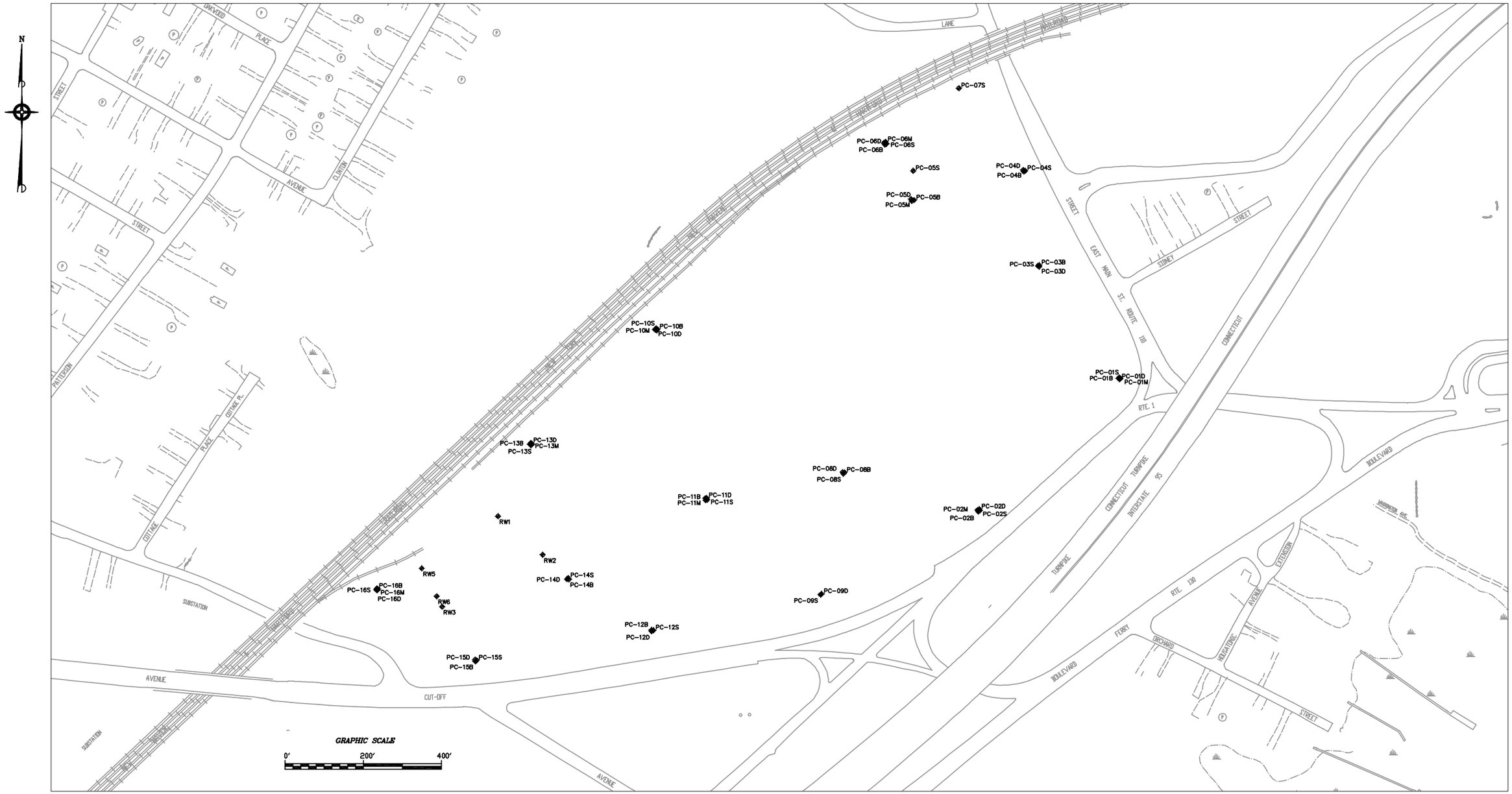
PLAN CREATED BY FOSTER WHEELER ENVIRONMENTAL CORP.

FOSTER WHEELER ENVIRONMENTAL CORPORATION
470 ATLANTIC AVENUE
BOSTON, MASSACHUSETTS 02210

GRAPHIC SCALE
100' 0' 100' 200'

DRAWN BY: D.W. MACDOUGALL	TITLE: EPA FINAL SITE LAYOUT FIVE-YEAR REVIEW RAYMARK INDUSTRIES, INC. SITE STRAFORD, CT		
PREPARED BY: H. FORD			
CHECKED BY: H. FORD			
	SOURCE: BASE PLAN BY SEE NOTES		
	SCALE: AS NOTED	DATE: SEPTEMBER 8, 2005	PROJ. NO: 00127
PROJECT MANAGER: H. FORD	DRAWING NO: 3-3	ACFILE NAME: DWG\00127\0600\FIG_3-3.DWG	REV: 0
PROGRAM MANAGER: G. GARDNER			

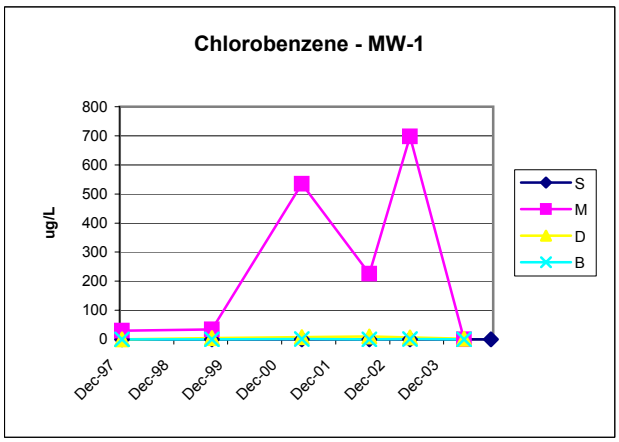
TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887
(978)658-7899

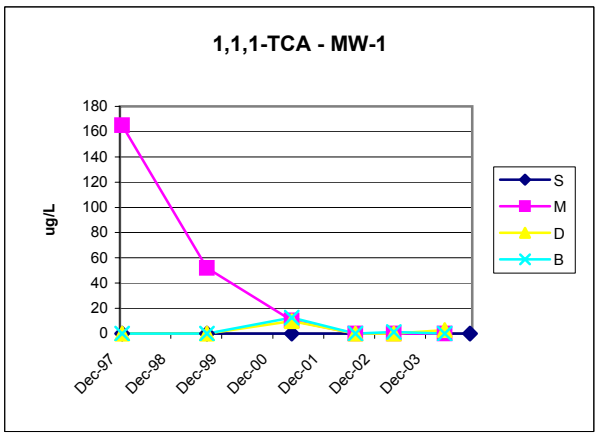


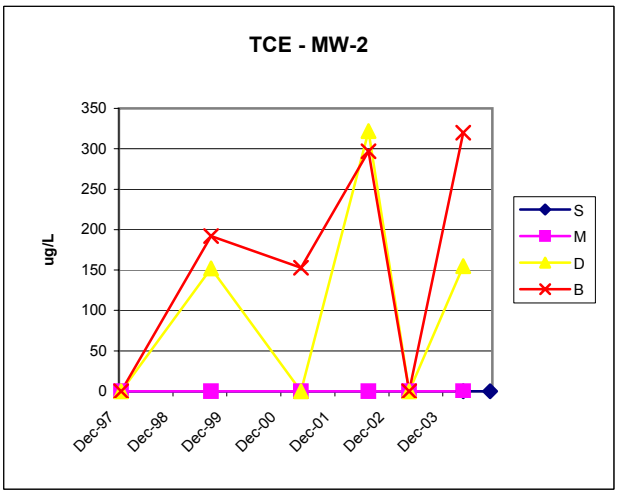
NOTES:

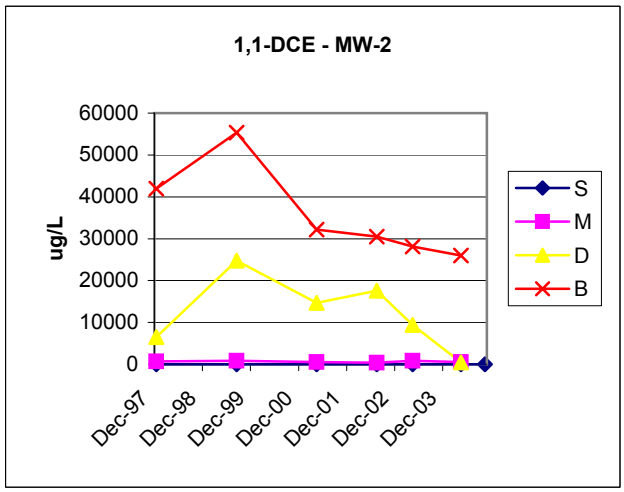
RAYMARK OU1 FINAL POST CLOSURE WELLS			FIGURE 3–4
FIVE–YEAR REVIEW			TETRA TECH NUS, INC.
RAYMARK INDUSTRIES, INC. SITE STRAFORD, CT			55 Jonspin Road Wilmington, MA 01887 (978)658–7899
DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	H. FORD	DATE:	AUGUST 9, 2005
SCALE:	AS NOTED	FILE NO.:	DWG\00127\0600\FIG_3–3.DWG

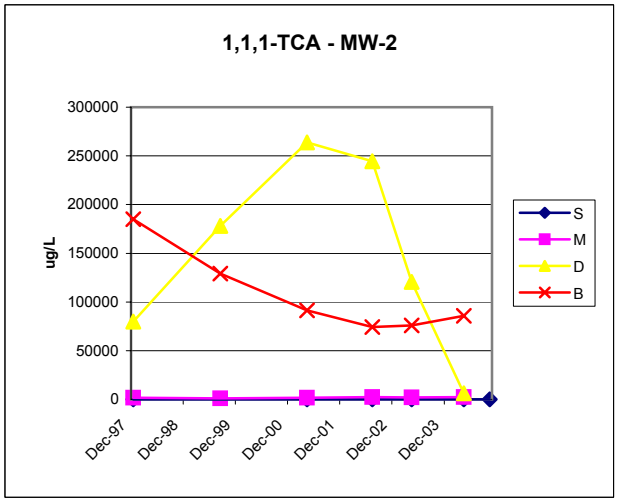
FIGURE 6-1
GROUNDWATER MONITORING DATA TRENDS FOR SELECTED VOCS
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT











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FIVE-YEAR REVIEW
RAYMARK INDUSTRIES, INC. SITE
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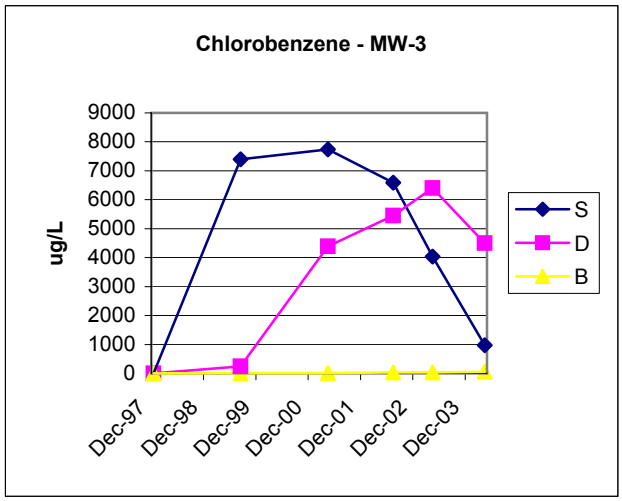

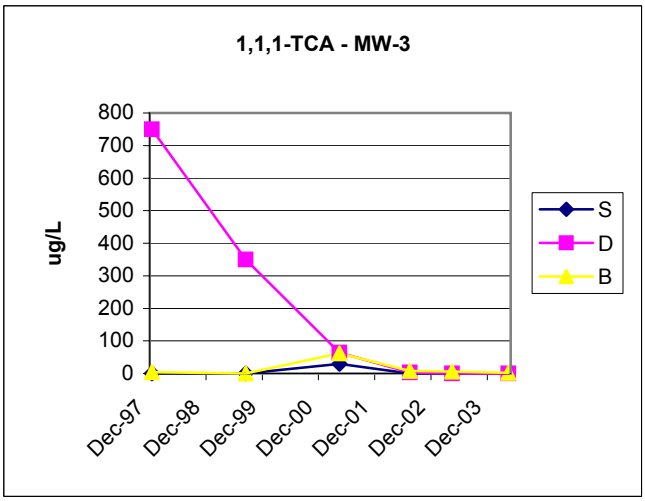

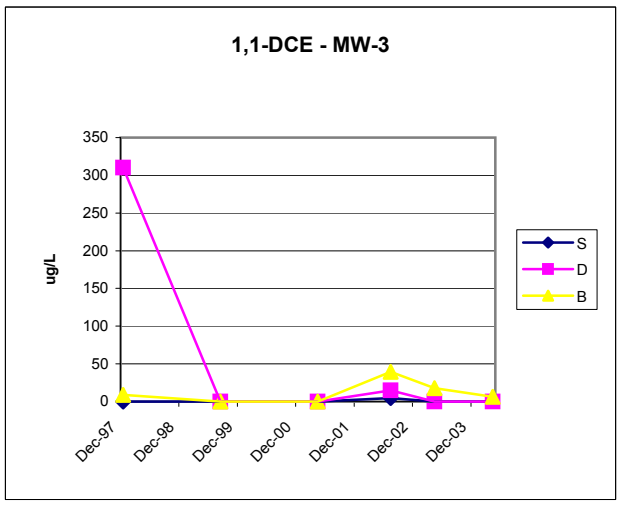

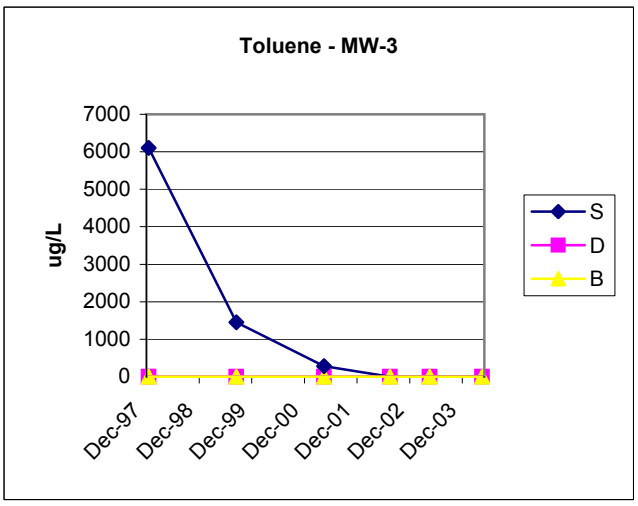

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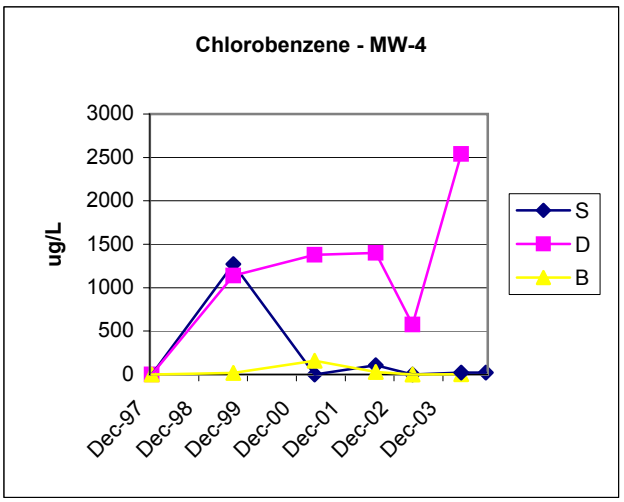

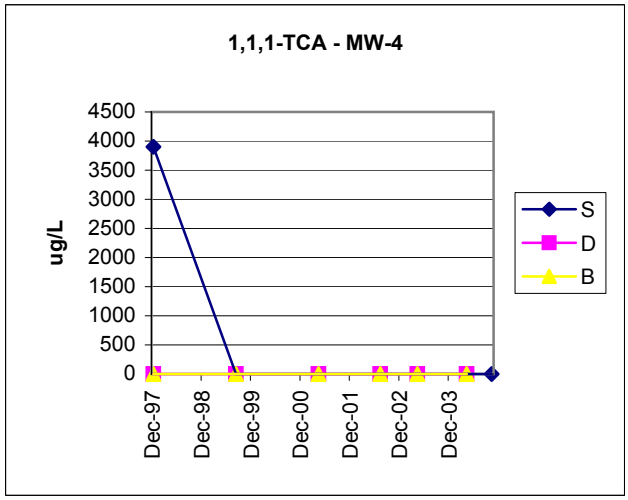

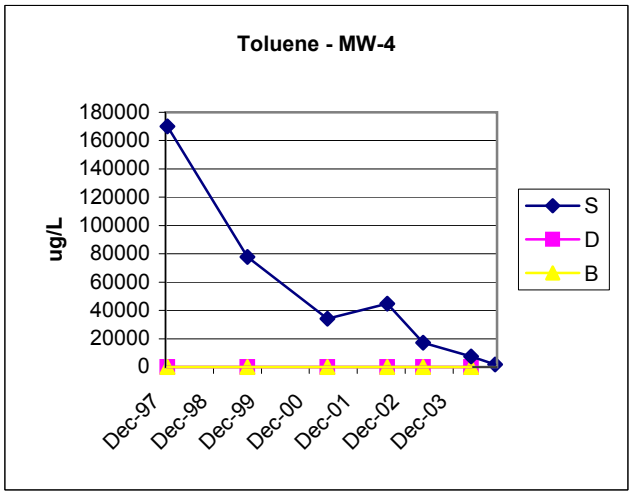

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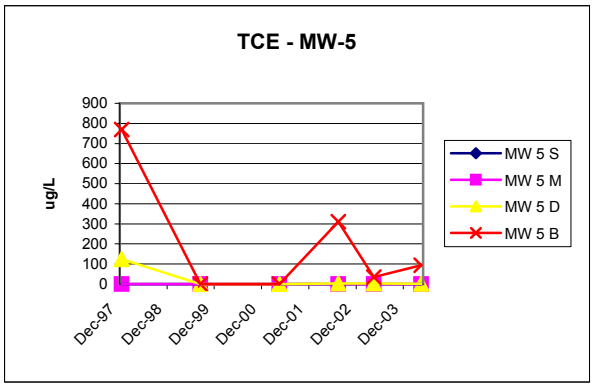

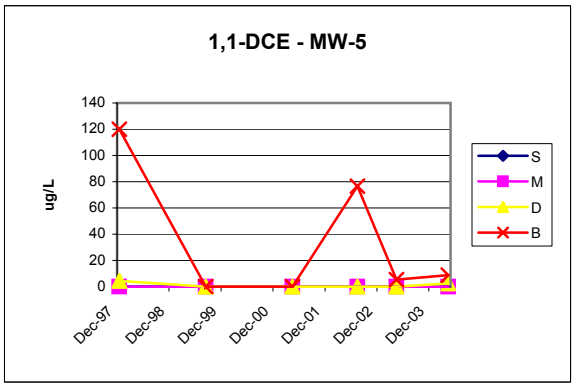

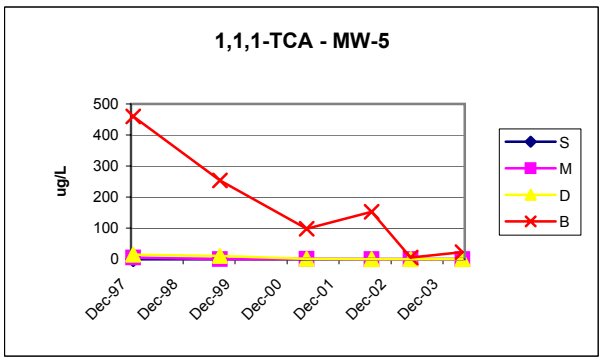

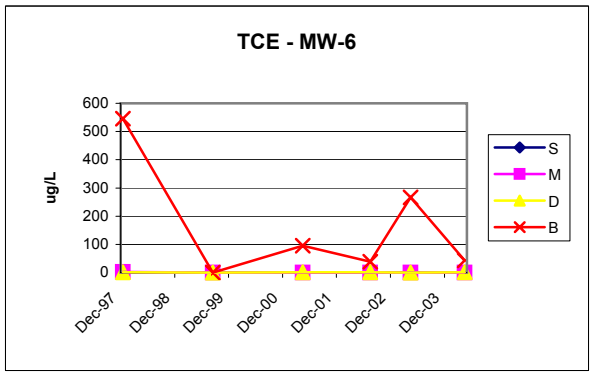

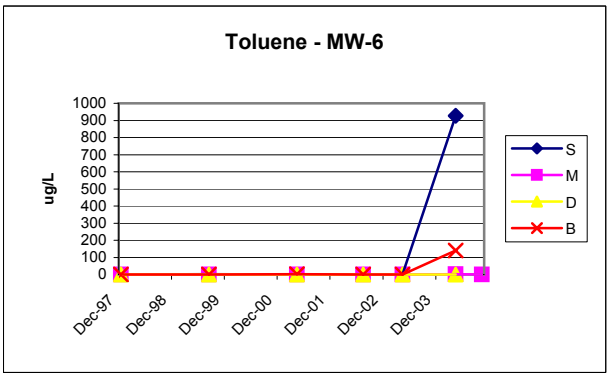

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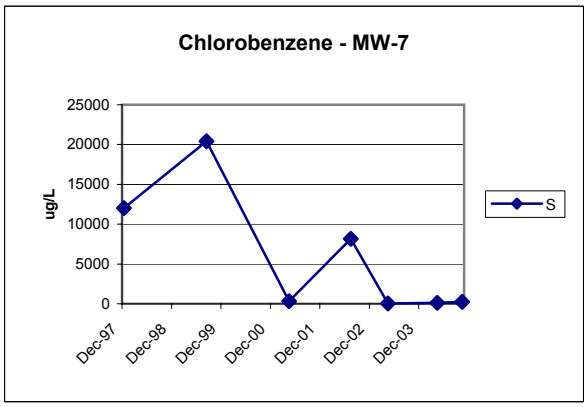

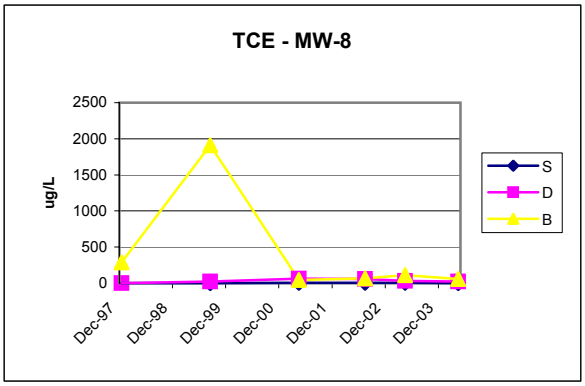

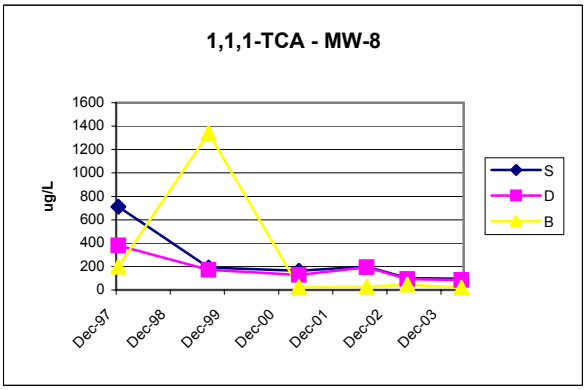

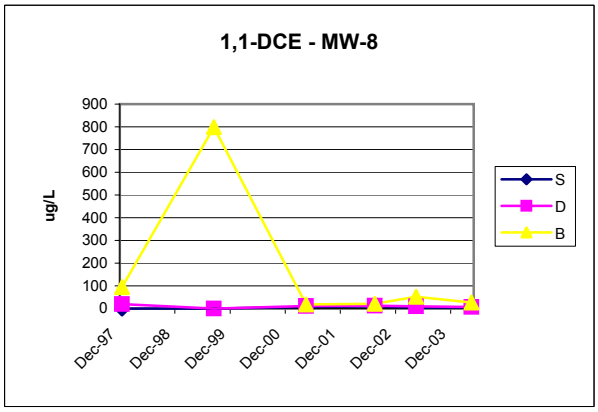

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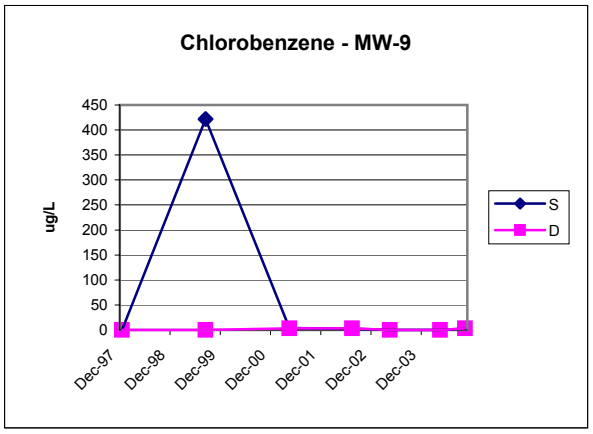

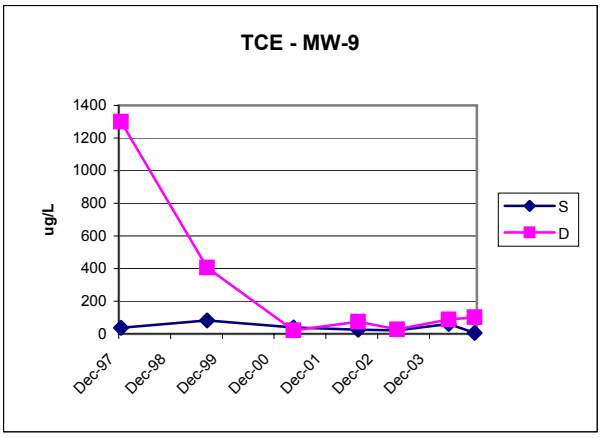

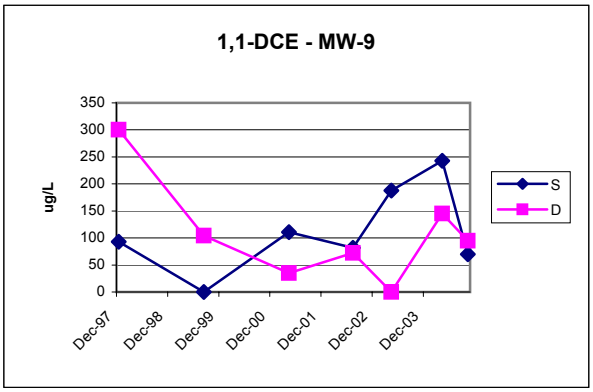

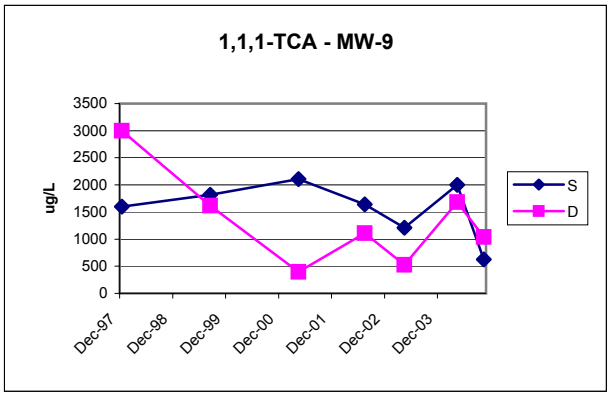

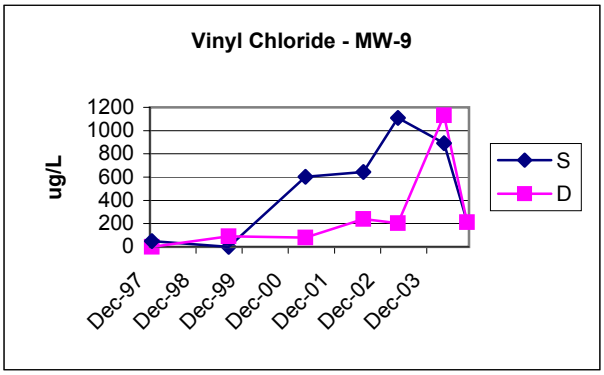

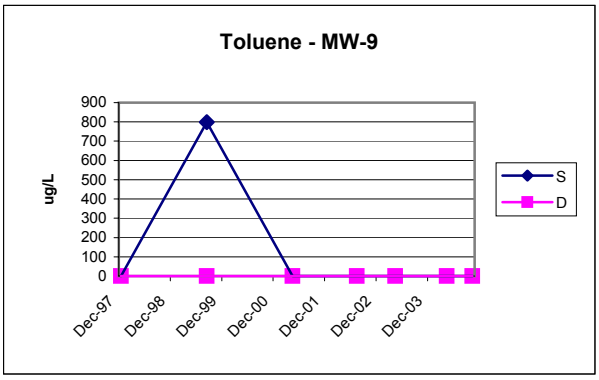

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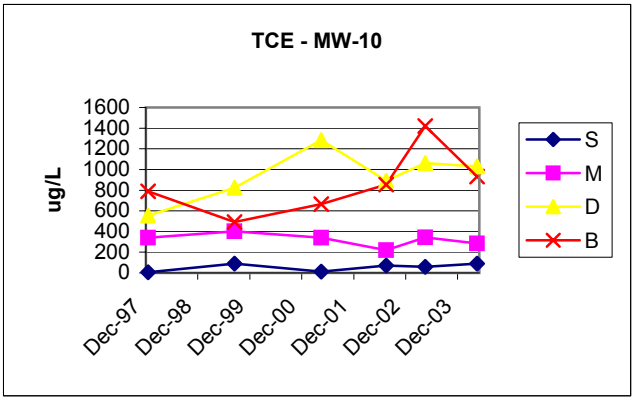

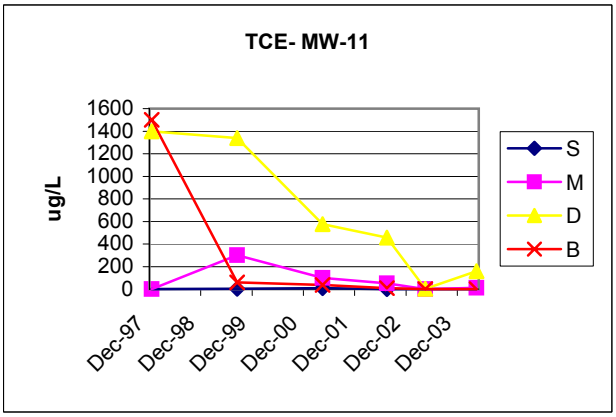

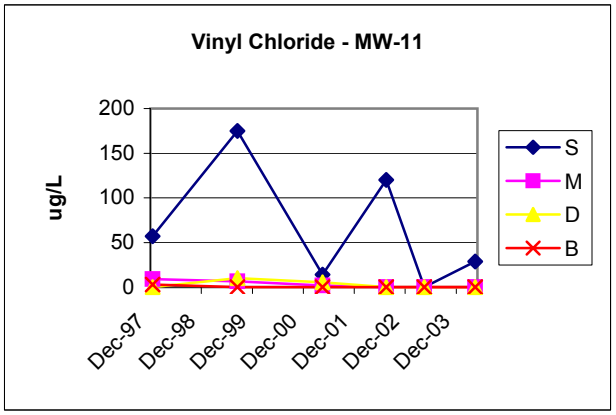

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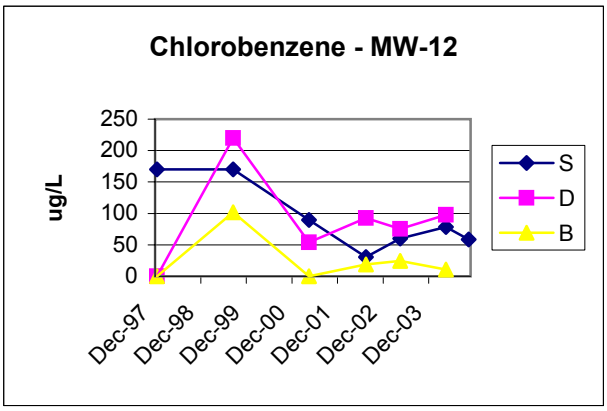

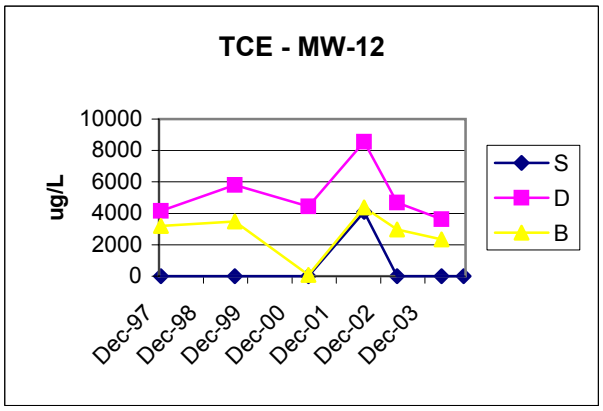

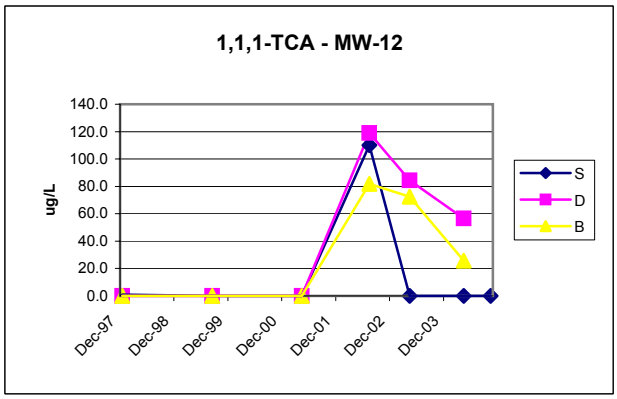

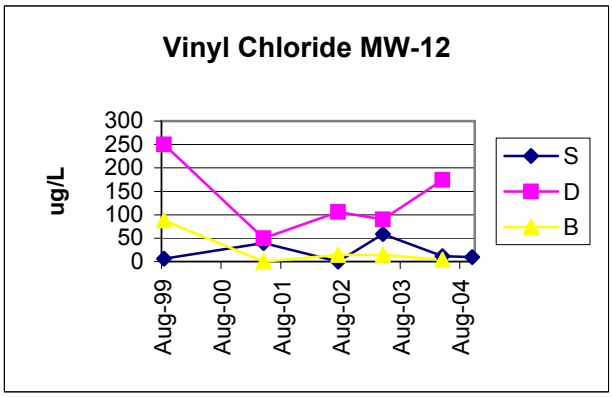

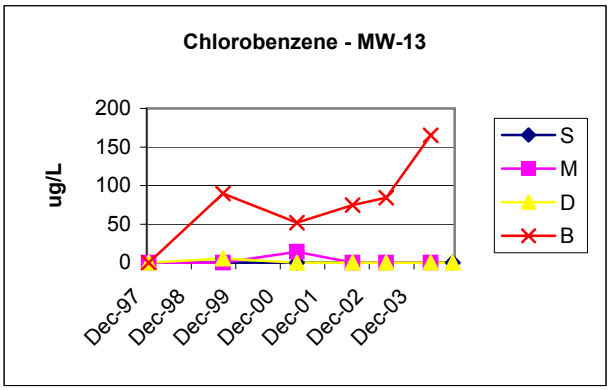

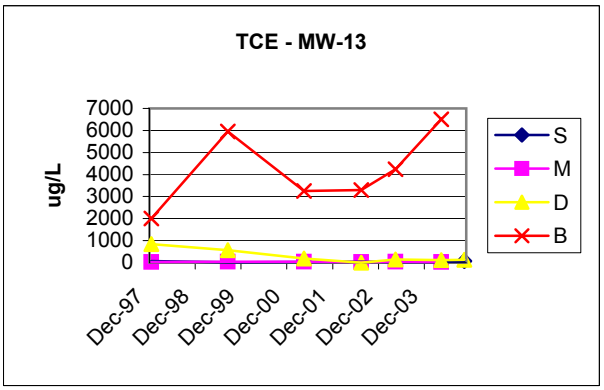

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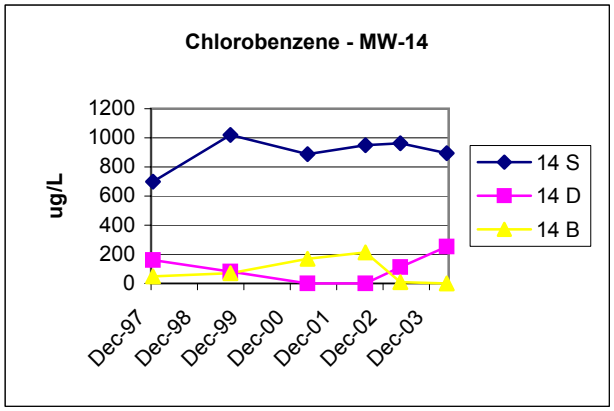

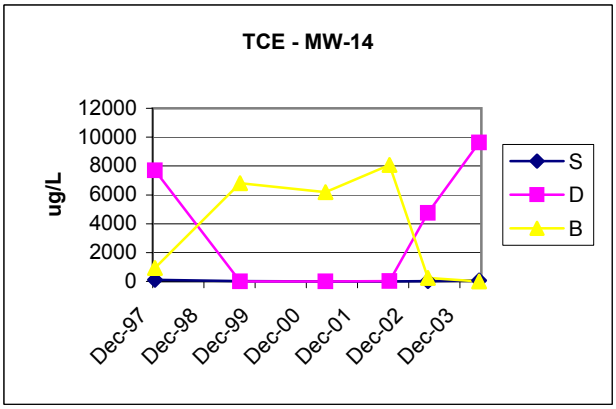

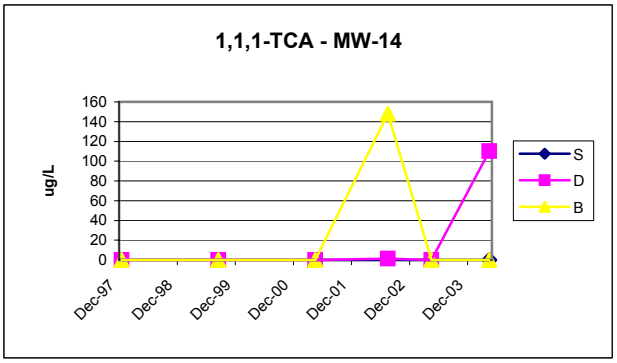

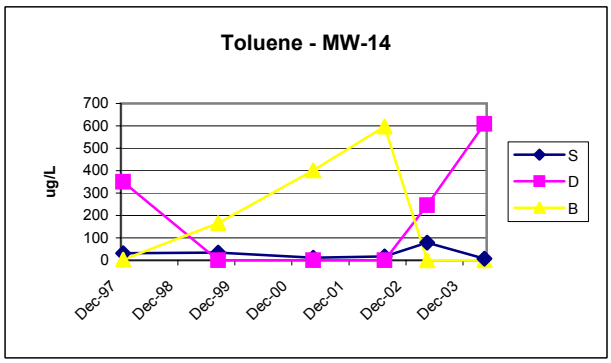

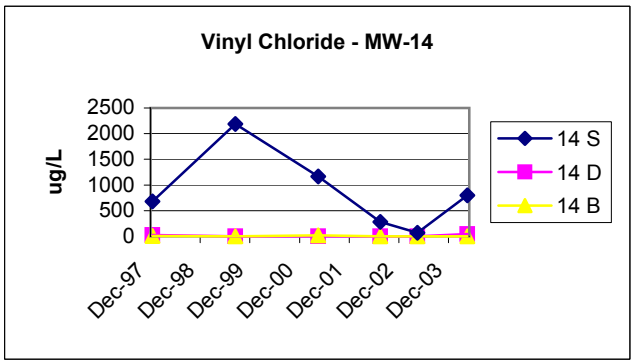

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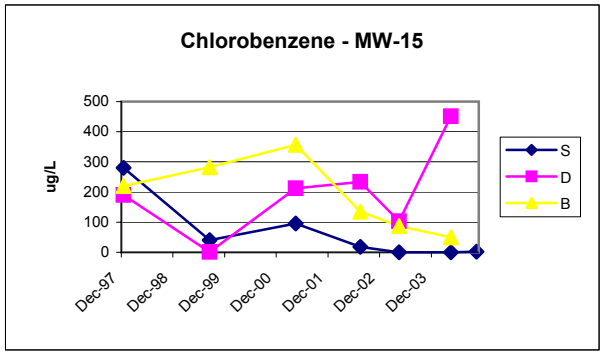

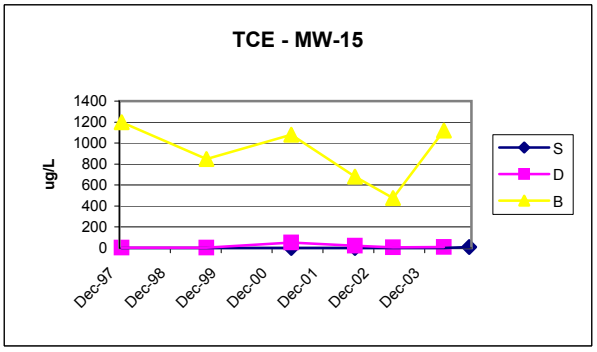

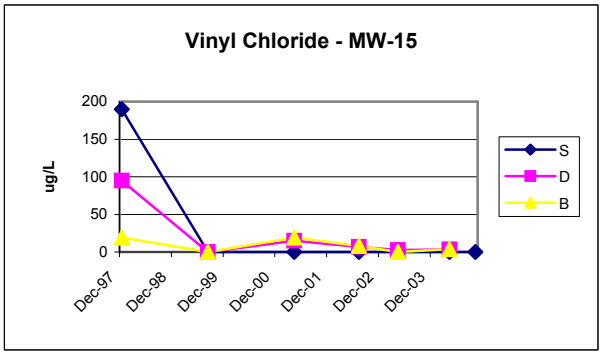

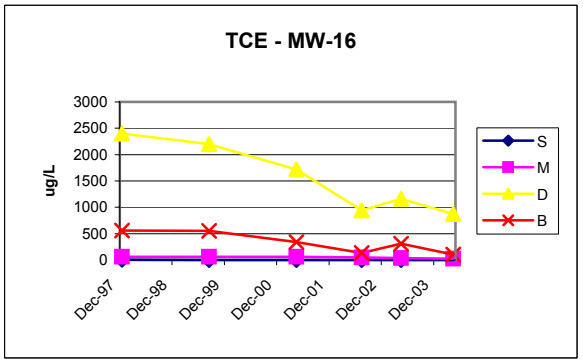

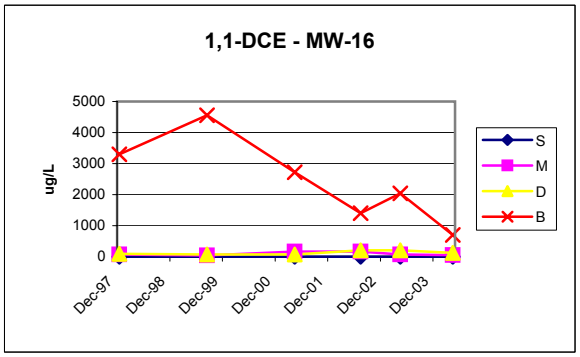

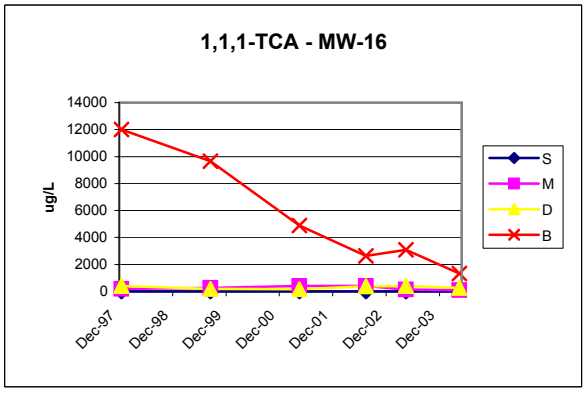

APPENDIX A

INTERVIEWS AND PUBLIC NOTICES

INTERVIEW SHEET

INTERVIEW DOCUMENTATION FORM

The following is a list of individual interviewed for this five-year review.

Name	Title/Position	Organization	Date
Nancy Gaines	Senior Environmental Scientist	Metcalf & Eddy	6/9/05 [1]
Ronald Curran	CTDEP Project Manager	CT Dept. of Env. Protection	6/9/05 [1]
Carla Cabral	Property Manager	Grubb & Ellis	6/9/05
Elaine O'Keefe	Director of Health	Town of Stratford, CT	6/9/05
William McCann	Conservation Officer	Town of Stratford, CT	6/8/05
Ronald Jennings	EPA Project Manager	U.S. Env. Prot. Agency	6/13/05
Bob Hoffman	Principal	Hoffman Engineering	6/20/05
Robert Osborne	Vice President	The Dock, Inc.	6/30/05
Gavin Forrester	Town Council Member	Third District – Stratford, CT	6/30/05

INTERVIEW DOCUMENTATION FORM

Name	Title/Position	Organization	Date
Marcia Stewart	President	Project Your Environment	6/30/05
Mary-Ellen Mohring	Reference Librarian	Stratford Library	6/30/05

1 = some email follow-ups for clarification of points.

INTERVIEW RECORD

INTERVIEW RECORD		
Site Name: Raymark		EPA ID No.:
Subject: Five Year Review	Time:	Date: 6/30/05
Type: • Visit		
Location of Visit: The Dock , Inc Stratford, CT		
Contact Made By:		
Name: Jim Murphy	Title: Community Involvement Coordinator	Organization: US EPA
Individual Contacted		
Name: Bob Osborne	Title: Vice President, The Dock, Inc.	Organization: The Dock, Inc. Member, Raymark Advisory Committee
Telephone No.: 203-377-2353	Street Address: 955 Ferry Blvd	
Fax No.:	City, State, Zip: Stratford, CT 06614	
E-Mail Address:		

Summary of Conversation

Overall impression of the Raymark Facility OU 1 activity is that the project was the result of a political process that distorted the environmental remediation. The remediation was conducted out of sequence according to EPA guidelines and has resulted in ongoing contamination from the site that will continue long into the future.

It is mind boggling that EPA could essentially build a Wal Mart in 2 years and has done no further cleanup in ten years with more than $15 million available.

In relation to additional future funding for the overall project, why is EPA not aggressively pursuing other PRPs such as Echlin? If EPA has thoroughly pursued other PRPs, why has the effort been so unsuccessful?

While the surface operation on the former facility property is appropriate, the continuing groundwater pollution has had a profound effect on the off-site neighborhood.

The major community concern associated with OU 1 is the contamination from the groundwater that is impacting the residential neighborhood around Housatonic Avenue. A secondary result of the off-site contamination not being addressed in a timely fashion is that the tax base has suffered due to some affected small businesses not paying their taxes. At the same time, the shopping center received a major tax break and is now asking the town for further tax relief.

Another concern is the issue of bus safety in the vicinity of the property.

There is also concern about the durability of the cap and systems into the future. While the state holds an insurance policy, there is a clause that the cap must have been installed "properly" which begs the question of how much would be available for particular repair and replacement of a cap that is only warranted for another 10 – 15 years. Who is accountable for the site in the long term?

Does not feel that he, the community, or the town is well informed about OU 1 activities, and suggests a public meeting or forum following the publication of the Five Year Review report to provide an opportunity for additional community review and comment.

INTERVIEW RECORD		
Site Name: Raymark		EPA ID No.:
Subject: Five Year Review	Time:	Date: 6/30/05
Type: • Visit		
Location of Visit: Stratford		
Contact Made By:		
Name: Jim Murphy	Title: Community Involvement Coordinator	Organization: US EPA
Individual Contacted		
Name: Marcia Stewart	Title: President	Organization: Protect Your Environment (PYE)
Telephone No.:	Street Address: 59 Beers Place	
Fax No.:	City, State, Zip: Stratford	
E-Mail Address:		

Summary of Conversation

Overall impression of the OU 1 project is that it has created a busy commercial area.

Negative impact is that the shopping center has taken business from other local stores while receiving a significant tax break; objectionable that the shopping center is now seeking additional tax breaks from the Town; positive aspect is that stores have contributed to local community organizations.

Major community concern is the negative impact on the Housatonic Avenue neighborhood resulting from groundwater contamination and vapor intrusion.

Unaware of any major incidents at shopping center.

Is made aware of issues by other community residents.

INTERVIEW RECORD		
Site Name: Raymark		EPA ID No.:
Subject: Five Year Review	Time:	Date: 6/30/05
Type: • • Visit • • •		
Location of Visit: Town Hall Stratford, CT		
Contact Made By:		
Name: Jim Murphy	Title: CI Coordinator	Organization: US EPA
Individual Contacted		
Name: Gavin Forrester	Title: Town Council Member, Third District	Organization: Stratford Town Council
Telephone No.: 203-377-0218	Street Address: 103 Orchard Street	
Fax No.:	City, State, Zip: Stratford, CT	
E-Mail Address: GAVINFORRESTER@prodigy.net		

Summary of Conversation

Overall impression is that the project is a success and proves that a contaminated site can be put back into productive use – a model for Brownfield's efforts.

Increased traffic volume due to change in use from industrial to retail is the greatest impact to the surrounding community; difficult for pedestrians on streets around shopping center; need for bus shelters.

Negative aspect of OU 1 is the groundwater contamination that continues to impact the off-site residential area.

Not aware of incidents or vandalism; trash problem has been addresses by fence around shopping center; noise problem for nearby residents due to truck unloading.

Gets most of information about OU 1 and other Raymark issues from attending RAC meeting as well as hearing concerns from residents; does not get much information directly from town hall.

Suggests consideration of allowing buses to directly access the shopping center.

Shopping center has been active in beautification efforts, has increased employment, and has brought increased business to other stores through creation of a vibrant retail area.

INTERVIEW RECORD		
Site Name: Raymark		EPA ID No.:
Subject: Five Year Review	Time:	Date: 6/30/05
Type: • Visit		
Location of Visit: Stratford Public Library		
Contact Made By:		
Name: Jim Murphy	Title: Community Involvement Coordinator	Organization: US EPA
Individual Contacted		
Name: Mary-Ellen Morhing	Title: Reference Librarian	Organization: Stratford Library Association
Telephone No.: 203-385-4461	Street Address: 2203 Main Street	
Fax No.:	City, State, Zip: Stratford, CT 06615	
E-Mail Address:		

Summary of Conversation

Overall impression is that initial investigation, cleanup, and construction stages were very difficult for the community. The end product is fine and people no longer dwell on the past.

Positive effects are that the area is now visually improved and there has been an economic improvement.

Negatives are the increased traffic and the linking of the shopping center to the debate over expanding access to and from I-95.

General concerns about OU 1's future:

- Will there be long-term health effects for workers at the shopping center?
- Existing and future businesses on the site must be closely monitored to ensure that they obey all restrictions. What guarantee that monitoring and enforcement will continue in the long term future?

Community generally views EPA negatively; lack of trust.

EPA keeps community and library well informed through RAC and facts sheets. Important for EPA to keep Elaine O'Keefe well informed since she is primary resource for those in Stratford seeking detailed information about Raymark.

Suggested a more detailed document than Bulletins 24 & 44 to provide in depth

information without requiring people to review the primary and very large documents.

PUBLIC NOTICES

U.S. Environmental Protection Agency

Superfund

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Laws, Policies & Guidances
Information Sources
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Superfund For Kids

Five-Year Reviews

Five-Year Reviews generally are required by CERCLA or program policy when hazardous substances remain on site above levels which permit unrestricted use and unlimited exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. Generally, reviews are performed five years following the initiation of a CERCLA response action, and are repeated every succeeding five years so long as future uses remain restricted. Five-year reviews can be performed by EPA or the lead agency for a site, but EPA retains responsibility for determining the protectiveness of the remedy.

QuickLinks
Acronyms
Topics
FAQs
Publications
Key to the Site
Search Hints

You will need Adobe Acrobat Reader, available as a free download, to view some of the files on this page. See EPA's PDF page to learn more about PDF, and for a link to the free Acrobat Reader.

National Contingency Plan (NCP) guidelines on Five-Year Reviews
(40 CFR Part 300.430(f)(4)(ii)) [PDF: 51 KB, 2 pages]

"Five Year Review Process in the Superfund Program" (April 2003)
OSWER 9355.7-08FS, EPA 540-F-02-004 [PDF: 733 KB, 8 pages]

"Superfund Today: Focus on Five-Year Reviews and Involving the Community" (December 2002)
OSWER 9200.2-42FS, EPA 540-F-01-011 [PDF: 493 KB, 2 pages]

"Comprehensive Five-Year Review Guidance" (June 2001)
OSWER 9355.7-03B-P, EPA 540-R-01-007

"Five-Year Review Program Initiatives" (August 2001)
OSWER 9355.7-07 [PDF: 2 M, 6 pages]

"Five-Year Review – Questions & Answers" (December 2004)
[PDF: 85 KB, 7 pages]

Search for Five-Year Reviews Online This tool allows you to search by state, site name or EPA ID, region, keyword, or fiscal year across all available Five-Year Reviews.

Five Year Review Reports Available On-line

- EPA Region 3 Sites (PA, DE, DC, MD, VA, WV)
- EPA Region 4 Sites (AL, FL, GA, KY, MS, NC, SC, TN)
- EPA Region 5 Sites (IL, IN, MI, MN, OH, WI)

- EPA Region 6 Sites (AR, LA, NM, OK, TX)
- EPA Region 7 Sites (IA, KS, MO, NE)
- EPA Region 8 Sites (CO, MT, ND, SD, UT, WY)
- EPA Region 10 Sites (AK, ID, OR, WA)

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Last updated on Thursday, December 9th, 2004
URL: http://www.epa.gov/superfund/action/postconstruction/5yr.htm

EPA

Superfund Today

FOCUS ON FIVE-YEAR REVIEWS INVOLVING THE COMMUNITY

Checking Up On Superfund Sites:
The Five-Year Review

The U.S. Environmental Protection Agency (EPA) conducts regular checkups, called five-year reviews, on certain Superfund sites. EPA looks at sites where cleanup left wastes that limit site use. For example, EPA will look at a landfill to make sure the protective cover is not damaged and is working properly. EPA will also review sites with cleanup activity still in progress after five years.

The Five-Year Review is:

- a regular EPA checkup on a Superfund site that has been cleaned up—with waste left behind—to make sure the site is still safe;
- a way to make sure the cleanup continues to protect people and the environment; and
- a chance for you to tell EPA about site conditions and any concerns you have.

In both cases, EPA checks the site to make sure the cleanup continues to protect people and the environment. The EPA review team conducts the review and writes a report on its findings. At some sites, other federal agencies, a state agency, or an Indian tribe may do the review, but EPA stays in the process and approves the report.

During the review, EPA studies information on the site, including the cleanup and the laws that apply, and inspects the site to make sure it continues to be safe. EPA needs information from people who are familiar with the site. As someone living close to the site, you may know about things that can help the review team decide if it is still safe. Here are some examples of things to tell EPA about:

- Broken fences, unusual odors, dead plants, materials leaving the site, or other problems
- Buildings or land around the site being used in new ways
- Any unusual activities at the site, such as dumping, vandalism, or trespassing
- Ways the cleanup at the site has helped the neighborhood.

For More Information ...

... about a Superfund site in your neighborhood, please call the toll-free Superfund/RCRA Hotline at 1-800-424-9346 or the Community Involvement Coordinator in the EPA regional office for your state. Your local EPA office can tell you where you can go to review files on every Superfund site in your area. Often, EPA holds community meetings to let people who live near a site know about site activities. You also may find useful information on the Superfund home page (www.epa.gov/superfund). For more information on the review process, see "Comprehensive Five Year Review Guidance," EPA 540-R-01-007, OSWER 9355.7-03B-P, June 2001.

The Five-Year Review:
Continuing to Protect You and the Environment

Step 1: Develop Plan

To plan a five-year review, the site manager forms a review team, which may include an EPA Community Involvement Coordinator, scientists, engineers, and others. The team members decide what they will do at the site and when they will do it. The Community Involvement Coordinator is the member of the team who works with your community during the review.

Your role: EPA will announce the start of the review, probably through a notice in a newspaper or a flyer. Review the notice to see when the review will start.

Step 2: Collect Information

The review team members collect information about site cleanup activities. They talk with people who have been working at the site over the past five years, as well as local officials, to see if changes in local policy or zoning might affect the original cleanup plan. The team usually visits the site to see if the cleanup equipment is working properly, to take new samples, and to review records of activities during the past five years. They may give you a call or meet with you in person.

Your role: If you know anything about unusual site activities at or around the site, such as trespassing or odors, or have any other concerns, call the Community Involvement Coordinator at once.

Step 3: Ensure Safety, Announce Findings, and Publish Report

The review team uses the information collected to decide if your community and the environment are still safe from the contaminated material left at the site. If the cleanup activities are keeping people and the environment safe, the team calls them "protective." When cleanup goals are not being met, or when problems come up, the review team will call the cleanup activities "non-protective." When the team finishes the five-year review, it writes a report about the information that includes background on the site and cleanup activities, describes the review, and explains the results. The review team also writes a summary and announces that the review is finished. They tell your community (via public notices, flyers, etc.) where to find copies of the report and summary—at a central place called the site repository—for anyone to see.

Your role: Read about the site and learn about the cleanup methods being reviewed. Review the report. Ask the Community Involvement Coordinator any questions you have about the site.

What Happens After The Review?

As long as contaminated materials at the site stop people from freely using the land, EPA will do a review every five years. EPA also regularly monitors the site based on an operations and maintenance plan it develops. For example, the site manager may visit the site and read reports about activities at the site. Also, the site workers may visit the site to cut the grass, take samples, or make sure equipment is working. If you see any problems or things that concern you—don't wait for the five-year review—let EPA know right away.

U.S. EPA
Office of Solid Waste and Emergency Response
5204G

EPA 540-F-01-011
9200.2-42FS
December 2002

Five-Year Review Process in the Superfund Program

April 2003

EPA as required by statute and, as a matter of policy, reviews the remedies at certain sites every five years. Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), requires that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site be subject to a Five-Year Review. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) defines this to mean contamination left at levels that do not allow for unlimited use and unrestricted exposure. This fact sheet summarizes the guidance document, *Comprehensive Five-Year Review Guidance (EPA 540-R-01-007)* that EPA issued in June 2001.

This document summarizes previously issued guidance to EPA personnel. It is not a regulation and does not create any legal obligations on any person or entity. EPA will apply the guidance referenced in this document to any particular project only to the extent appropriate in light of the facts EPA welcomes public comment on this document at any time.

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F. How does EPA formulate its conclusions? 6

A. Overview

Under CERCLA §121(c), EPA is required to review the remedies at Superfund sites where hazardous substances remain at levels that potentially pose an unacceptable risk. Such reviews must be conducted every five years or may be conducted more frequently if necessary to ensure the protectiveness of the remedy. The Five-Year Review requirement applies to remedial actions selected under CERCLA §121 upon completion of which, hazardous substances, pollutants, or contaminants will remain on site. Five-Year Reviews are also conducted as a matter of policy for other CERCLA actions. Removal actions conducted under CERCLA §104 and Corrective Actions conducted under the Resource Conservation and Recovery Act (RCRA) are not subject to the Five-Year Review requirement; however, Regions may conduct Five-Year Reviews for these or other remedies as a matter of policy or at their discretion. In June 2001, EPA issued the *Comprehensive Five-Year Review Guidance (EPA 540-R-01-007)* to aid Regions and other agencies with responsibilities for conducting Five-Year Reviews. This fact sheet was prepared as a brief summary of that guidance document.

B. When is a Five-Year Review conducted?

A Five-Year Review may be required or appropriate when a remedial action leaves hazardous substances on the site at levels that do not allow for unlimited use and unrestricted exposure. Unlimited use and

unrestricted exposure (UU/UE) means that there are no restrictions placed on the potential use of land or other natural resources. In general, if the selected remedy relies on restrictions of land, ground water, or surface water use by humans or if any physical or engineered barrier is part of the remedy, then the use has been limited and a Five-Year Review should be conducted. There are two types of Five-Year Reviews, statutory and policy. Statutory reviews are required by CERCLA at post-SARA remedial actions that upon completion of the action leave hazardous substances, pollutants or contaminants on site. Policy reviews are performed, as a matter of policy, for pre-SARA remedial actions that leave hazardous substances, pollutants or contaminants on site, and at removal-only NPL sites where hazardous substances, pollutants or contaminants were left on site at levels that do not permit unlimited use and unrestricted exposure. Policy reviews are also conducted at other sites, including pre- or post-SARA remedial actions, that will take more than five years to complete.

The initiation, or trigger date, that starts the Five-Year Review period depends upon whether it is a statutory or policy review and if the review is a first or subsequent review. A statutory review is triggered by the initiation of the first remedial action that leaves hazardous substances, pollutants or contaminants on site at levels that do not allow for unlimited use and unrestricted exposure. In cases where there are multiple remedial actions, the earliest remedial action that leaves such substances on site should trigger the initial review, even if it is an interim remedial action.

A policy review is initially triggered by the date that the construction phase for all remedies is completed at a site. The date of construction completion is generally the date of the Preliminary Close Out Report (PCOR) or the date of the Final Close Out Report (FCOR) for sites that do not have a PCOR.

After completion of the first statutory or policy Five-Year Review, the trigger for subsequent reviews is the signature date of the previous Five-Year Review report. Lead agencies may choose to conduct a Five-Year Review earlier or more frequently than every five years to ensure protection of human health and the environment.

Five-Year Reviews continue throughout the life of the site until hazardous substances, pollutants or contaminants no longer remain on site at levels that do not allow for unlimited use and unrestricted exposure. The basis for this finding should be documented in the final Five-Year Review report.

C. Who is responsible for conducting the Five-Year Review?

The lead agency, the agency providing the remedial project manager, has primary responsibility for conducting the Five-Year Review, while the support agency provides information and review support.

EPA also encourages appropriate State and Tribal involvement for Fund-financed and Enforcement-lead remedial actions. Where the State or Tribe is the lead agency, the NCP provides that EPA concurrence is needed on the protectiveness determination contained in the Five-Year Review. At federal facilities, the Federal agency in charge of the facility has the responsibility to conduct the Five-Year Review. EPA should provide concurrence with the protectiveness determinations, or develop its own independent determinations.

D. What are the components of a Five-Year Review?

The Five-Year Review process integrates information taken from decision documents and operational data with the experiences of those responsible for and affected by actions at the site. There are six components to the Five-Year Review process: 1) community involvement and notification, 2) document review, 3) data review and analysis, 4) site inspection, 5) interviews and 6) protectiveness determination as shown in Figure 1. Together, the reviewer uses these components to assess the remedy's performance, and, ultimately, to determine the protectiveness of that remedy.

Community Involvement and Notification

The reviewer begins working with the site's Community Involvement Coordinator (CIC) during the initial planning stages of the Five-Year Review to determine the appropriate level of community involvement and to notify all potentially interested parties that the Five-Year Review will be conducted. This notification may include States, Tribes, appropriate representatives of the community, local officials, potentially responsible parties (PRPs), Federal and/or State Trustees for Natural Resources (Trustees) and appropriate EPA offices. It is recommended that EPA's community involvement activities during the review include notifying the community that the Five-Year Review will be conducted, notifying the community that the Five-Year Review has been completed, and providing the results of the review to the local site repository.

Document Review

A review of documents is an early step in the Five-Year Review process. All relevant documents and data are reviewed to obtain information to assess performance of the response action. The lead agency reviews various documents to obtain the necessary information, including those for remedy decisions (*e.g.*, Records of Decision, Explanation of Significant Differences), enforcement decisions (*e.g.*, Consent Decrees, Administrative Orders on Consent), site investigations, remedial design and construction, and remedy performance.

Data Review and Analysis

The lead agency also reviews sampling and monitoring plans and results from monitoring activities, operation and maintenance (O&M) reports or other documentation of remedy performance, including previous Five-Year Review reports. The data contained in these reports form the primary basis for the technical analyses and for the subsequent protectiveness determination. The type and quality of these data will have a significant impact on findings and conclusions. In some cases, the lead agency may also need to conduct supplemental sampling or collect other data.

Site Inspections

EPA or the lead agency conducts site inspections to gather information about a site's current status and to visually confirm and document the conditions of the remedy, the site, and the surrounding area. The inspection should be recent, and be conducted no more than nine months before the expected signature date of the review. At Federal facility sites, a State and/or EPA representative may wish to be present and/or participate in site inspections.

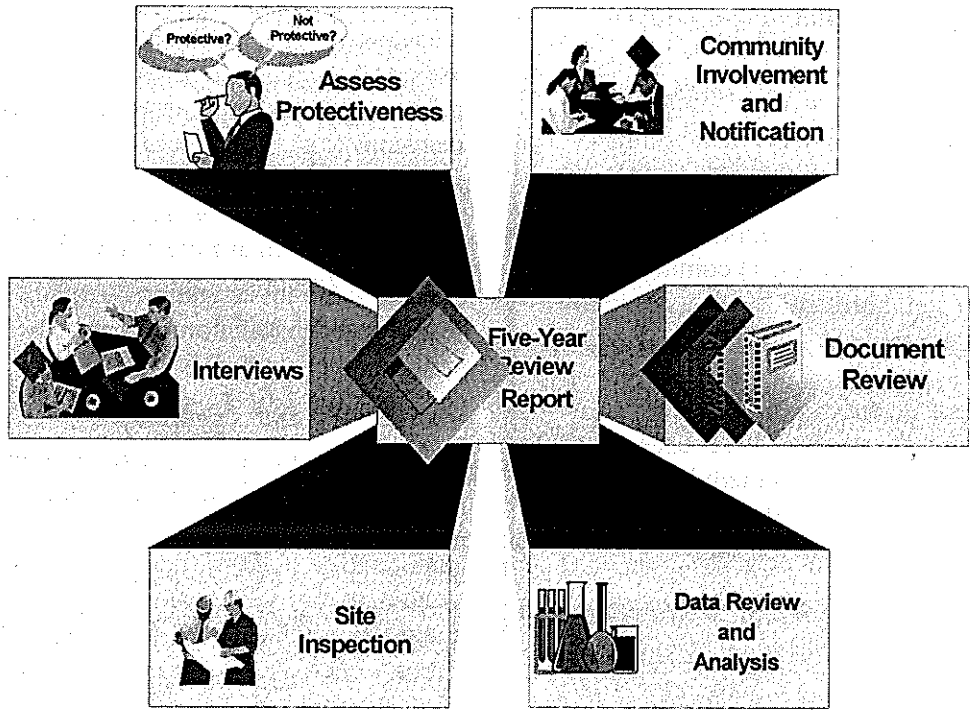

Figure 1: Components of the Five-Year Review Process

Interviews

As necessary, interviews may be conducted to provide additional information about a site's status and/or identify remedy issues. Individuals who may be interviewed include: the site manager; site personnel; Federal, State, and Tribal regulatory authorities; and people who live or work near the site.

E. How does EPA assess the protectiveness of a remedy?

The purpose of a Five-Year Review is to determine whether the remedy at a site is, or upon completion will be, protective of human health and the environment. EPA's technical assessment of a remedy examines the three questions shown in Figure 2. These questions provide a framework for organizing and evaluating data and ensure that all relevant issues are considered when determining the protectiveness of the remedy.

Question A: Is the remedy functioning as intended?

When answering Question A, the reviewer focuses on the technical performance of the remedy, whether that remedy is related to a single Operable Unit (OU) or the entire site. Data on monitoring, system performance and operation and maintenance of the remedy plays an important role in the determinations. In addition, EPA confirms that access and institutional controls (ICs) are in place and successfully prevent exposure. In answering Question A, the reviewer should consider the implementation status of the remedy.

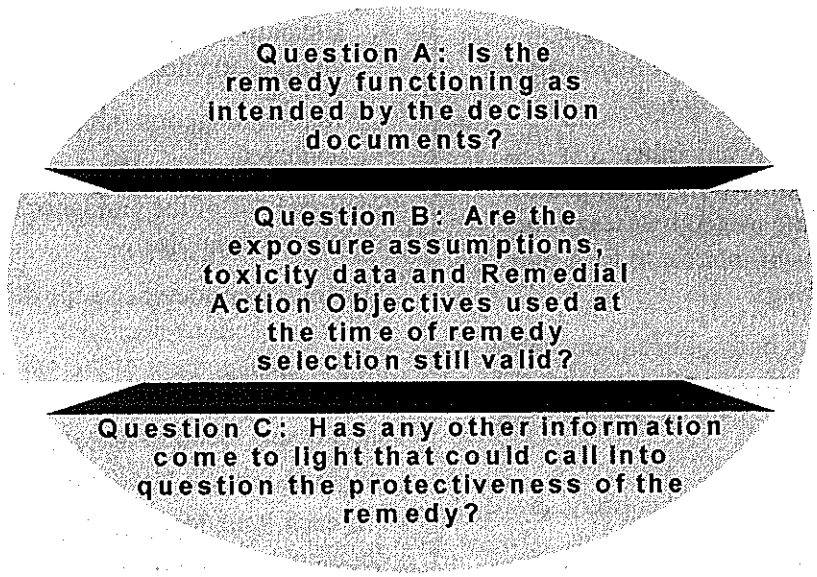

Figure 2: Three Questions for Assessing Protectiveness

When the Remedy is under Construction

The focus of the review is to determine if the remedy is being constructed in accordance with the requirements of the decision documents and design specifications, and if the remedy is expected to be protective when it is completed.

When the Remedy is Operating or Completed

Additional aspects of remedy implementation are addressed. In general, the following will be assessed:

- Remedial action performance,
- System operations/operation and maintenance (O&M),
- Costs of system operations/O&M,
- Implementation of institutional controls and other measures,
- Monitoring activities,
- Opportunities for optimization, and
- Early indicators of potential remedy problems.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives still valid?

In answering Question B, the lead agency should review all the risk parameters on which the original remedy decision was based. This assessment should test the validity of all assumptions that underlie the original risk calculation. To reach its conclusions, the lead agency will generally consider changes in:

- Target populations,
- Exposure routes,
- Site characteristics and land use,
- Reference doses and slope factors,
- Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considereds (TBCs), and
- Remedial Action Objectives (RAOs).

EPA generally will not reopen remedy selection decisions contained in RODs unless a new or modified requirement calls into question the protectiveness of the selected remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The reviewer considers any other information that comes to light that could call into question the protectiveness of the remedy. Situations of interest to EPA may include the following:

- Ecological risks had not been adequately evaluated or addressed at a site, and there is no plan in place to address these risks through a future action;
- The site, although located entirely above the 500-year flood boundary, was partially inundated by a 100-year flood; and
- Land use changes that are being considered by local officials.

F. How does the lead agency formulate its conclusions?

The conclusions of the Five-Year Review should include:

- Identification of issues,
- Recommendations and follow-up actions, and
- A determination of whether the remedy is, or is expected to be, protective of human health and the environment.

The reviewer arrives at these conclusions through a technical assessment of the information collected during the document review, data collection, interviews, site inspection, and other activities.

The reviewer identifies all issues that currently prevent or may prevent the response action from being protective. Examples of issues that may be identified in a Five-Year Review report include the following:

- Inadequate ICs,
- Cleanup levels are not protective due to changes in chemical characteristics, and
- Remedial Action Objectives will not be achieved.

Section 4.4.1 of the Guidance contains additional examples.

The reviewer documents all such issues and follow-up actions needed to ensure the proper management of the remedy in the Five-Year Review report. The reviewer should also identify early indicators of potential remedy problems.

For each issue identified, the reviewer documents and ensures implementation of recommendations to resolve those issues. These recommendations are linked to follow-up actions in the Five-Year Review report. In addition, the reviewer may make additional recommendations that do not directly relate to achieving or maintaining the protectiveness of the remedy, such as activities related to O&M of the remedy and coordination with other public and government authorities. The following are the types of additional recommendations that may be included in the report:

- Provide additional response actions,
- Improve O&M activities,
- Optimize remedy,
- Enforce access controls and ICs, and
- Conduct additional studies or investigations.

After addressing Questions A, B, and C, the reviewer determines the protectiveness of the remedy or remedies at a site and documents the rationale for its determination(s). The reviewer should make a protectiveness determination for each OU. For sites that have reached construction completion, it is recommended

the review include an additional, comprehensive site-wide protectiveness statement.

The determination of whether the remedy remains protective of human health and the environment generally will be based on the answers to Questions A, B, and C and the information obtained in the process of answering them. Although protectiveness generally is defined by the risk range and hazard index (HI), the answers to Questions A, B, and C may identify other factors and issues that may impact the protectiveness of a remedy.

At the end of the technical analysis and evaluation, if the answers to Questions A, B, and C are *yes, yes, and no*, respectively, then the remedy normally will be considered protective. However, if the answers to the three questions are other than *yes, yes,, and no,* depending on the elements that affect each question, the remedy may be one of the following:

- Protective,
- Will be protective once the remedy is completed,
- Protective in the short-term; however, in order for the remedy to be protective in the long-term, follow-up actions need to be taken,
- Not protective, unless the following action(s) are taken in order to ensure protectiveness, or
- Protectiveness cannot be determined until further information is obtained.

If a protectiveness statement cannot be made, a time frame should be provided when a protectiveness determination will be made. This is done through an addendum. If this is the case, the next Five-Year Review is due five years from the date that the report is signed, not from the signature date of the addendum.

Even if there is a need to conduct further actions, it does not mean that the remedy is not protective. Normally, the remedy may be considered not protective when the following occur:

- An immediate threat is present (*e.g.* exposure pathways that could result in unacceptable risks are not being controlled);
- Migration of contaminants is uncontrolled and poses an unacceptable risk to human health or the environment;
- Potential or actual exposure is present or there is evidence of exposure (*e.g.*, institutional controls are not in place or not enforced and exposure is occurring); or
- The remedy cannot meet a new cleanup level and the previous cleanup level is outside of the risk range.

Once the Five-Year Review report is signed and placed in the local site repository, the lead agency should notify community members that the review is complete and the report is available.

As discussed in Section 1.3.3, the date EPA signs the report is the official completion date for the Five-Year Review, and this date becomes the trigger date for subsequent reviews. This date should be entered into WasteLan as soon as possible.

FOR MORE INFORMATION

For additional information on the Five-Year Review process, please contact your Regional or Headquarters Five-Year Review Coordinator.

Office of Solid Waste and Emergency Response
Washington, D.C. 20460

OSWER 9355.7-08FS
EPA 540-F-02-004

Cleanup Progress at Raymark Industries Superfund Site Reviewed

Contact: David Deegan, EPA Office of Public Affairs, (617) 918-1017, deegan.dave@epa.gov

For Immediate Release: June 1, 2005; Release # dd050601

Boston - An assessment of cleanup progress is underway at the site of the former Raymark Industries, Inc. facility in Stratford, CT. The review, part of a five-year evaluation performed by EPA, is evaluating the performance of cleanup technologies at the East Main Street site where Stratford Crossings Shopping Center is located.

EPA conducts this type of review five years following the initiation of a Superfund response action, and every succeeding five yeas at sites where waste has been capped in place and use of the site remains restricted. The review is a comprehensive evaluation of the site remedy which will include an evaluation of the results of the ongoing sampling and monitoring activities to assess the performance of the cleanup systems. EPA will also talk with local Stratford officials and citizens to gain a better understanding of local concerns.

The review team evaluates available information to determine whether the existing remedy and/or safeguards are adequately protective of public health and the environment. Following the assessment, EPA will issue a "Five-Year Review Report" summarizing findings. The Agency performed an initial five year review for the Former Raymark Facility in 2000. At that time, EPA determined that the cleanup was protective of human health and the environment.

Raymark was a manufacturer of automotive brakes, clutch parts, and other friction components, primarily for the automotive industry. Raymark and its predecessors operated at a 34-acre parcel at 75 East Main Street in Stratford from 1919 until 1989 when operations ceased. Raymark's manufacturing waste was historically disposed of as fill at 75 East Main Street, at a minimum of 46 residential properties, and at numerous commercial and municipal properties in Stratford.

As a result of environmental investigations conducted by Raymark and the EPA, a remedy for the manufacturing facility was documented in a July 1995 "Record of Decision." In Sept. 1995, the cleanup of the Raymark property began with the demolition of 15 acres of buildings and the placement of an impermeable cap over those 15 acres as well as over the remaining 20+ acres of contamination on the property. Underlying the cap is an extensive plumbing network that removes solvents from the groundwater and gas from the soil. The cap was constructed in a manner that allowed commercial redevelopment of the property while ensuring the continued containment of the underlying contamination. In addition to the demolition and capping work, over 50 monitoring wells were installed in the cap to monitor the quality of the groundwater beneath the property.

The Conn. Dept. of Environmental Protection (DEP) provides ongoing operation and maintenance of the soil gas and solvent collection systems, as well as the two treatment facilities. It is anticipated that these treatment systems will be operating for many years. Environmental

land use restrictions for the property will prevent use of the shopping center property in any way that would negatively impact the cleanup. EPA's five year review process ensures that the cleanup systems remain protective of public health.

EPA recently completed investigations to determine the locations throughout Stratford that contain wastes from the former Raymark facility, and is working closely with the Raymark Advisory Committee, Stratford officials, and DEP staff to evaluate cleanup options for these areas. The Raymark Advisory Committee generally meets monthly on the second Tuesday at 6:30 p.m. at the Stratford Health Department located at 468 Birdseye Street in Stratford. The public is invited. Please call the Stratford Health Department at 203-385-4090 to confirm the date of the next meeting.

More information about cleanup activities at the site may be found on the EPA New England web site at: **www.epa.gov/region1/superfund/sites/Raymark** . EPA technical reports and documents are available for public review in the site information repository located at the Stratford Public Library, 2203 Main Street in Stratford, and at the EPA New England Records Center, One Congress Street, Boston, MA 02114 (617) 918-1440.

APPENDIX B

DOCUMENTS REVIEWED
AND REFERENCES CITED

APPENDIX B
DOCUMENTS REVIEWED

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Foster Wheeler Environmental Corporation (Foster Wheeler), 1998. Final Operation & Maintenance Manual, May 1998.

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APPENDIX C

SITE INSPECTION REPORT – OU1

SITE INSPECTION REPORT – OU2

SITE INSPECTION REPORT – OU4

SITE INSPECTION REPORT – OU5

ROUTINE FORMS FOR SITE INSPECTIONS

APPENDIX C
SITE INSPECTION – OU1

APPENDIX C

TO: Project File – Raymark Superfund Site
Operable Unit No. 1
RAC I W. A. No. 144-FRFE-01H3

FROM: Ann Franke

DATE: July 30, 2005

SUBJECT: Field Report – Site Inspection of Raymark OU1

cc: H. Ford
File: G00127-0500

TtNUS (Heather Ford and Ann Franke) performed a site inspection of the Raymark Operable Unit No. 1, Stratford, CT property on June 9, 2005. During the site visit, interviews were conducted with Nancy Gaines, Environmental Scientist, Metcalf & Eddy, Ron Curran, Project Manager, CT DEP; and Carla Cabral, Property Manager, Grubb & Ellis Management Services. These interviews are summarized in the five-year report.

After the interviews, Ms. Ford and Ms. Franke drove around the property over the impermeable cap cover, which is primarily an asphalt parking lot surrounding three stores—Home Depot, Shaws, and Walmart--with some grass and plantings around the perimeter. Some of the well locations were also viewed. The parking lot surface was well maintained. Landscaping seemed consistent with the requirements for plantings rather than bushes, raised beds, and no tall trees or deep-root plantings. No depressions where water could collect were seen; in fact, Mr. Curran said that there was some isostatic rebounding, as had been expected due to the construction of the stores. Ms. Gaines said that the grassy area along the hillside behind the stores is wet, but no erosion has occurred. No erosion or exposed dirt was seen, and mown grass covered the areas around the parking lot. The parking lot and landscaping appeared well-maintained, and no substantive problems were seen with regard to the integrity and effectiveness of the impermeable cap cover. See the attached pictures.

A new building for Webster Bank was being constructed while the Site was being inspected (see the attached picture). This construction is on one of the two remaining building pods on the Site. Mr. Curran indicated that care is being taken not to dig below

the allowable depth, and to stay above the orange warning layer, in order to maintain the integrity of the cap.

Ms. Gaines explained her O&M activities for the soil gas collection system, the NAPL collection system, and the groundwater monitoring programs. TtNUS verified the recording of these activities in log books in the West building. It appears that the activities required in the O&M Manual are being followed. The soil gas collection and groundwater monitoring systems are operating effectively. However, NAPL recovery has been discontinued for a year due to a leak in the NAPL collection tank. A new NAPL collection tank to replace the leaking one was delivered and was being installed during the Site visit. Even when the NAPL system is operational, recovery is low and occurring only in one of the five wells. Redevelopment of the wells did not improve recovery.

Mr. Curran discussed the Site systems in detail. He took Ms. Ford and Ms. Franke on a tour of the East and West treatment buildings, equipment, and security measures, and explained the operation of the soil gas and NAPL collection systems. A picture of the eastern treatment building is attached.

Ms. Cabral manages the general maintenance of the outside property, including landscaping and snow removal, and she arranges for the storm ceptor inspections. She is on-site weekly and for scheduled activities. She seemed fully aware of the deed restrictions for the Site. She obtains permission from CT DEP for any digging and use of herbicides, and permission was obtained from CT DEP to install a perimeter fence. She puts markers on the monitoring wells to avoid damage from snow plows. There have been some minor problems with debris and an uncovered dumpster behind Wal-mart, and she continues to contact them about it. About twice a week, trucks park after-hours in the parking lot (as Wal-mart has a national reputation for allowing trucks to park on their property). Signs have been posted prohibiting parking, and the trucks are asked to leave.

Construction of Webster Bank

Western treatment building

APPENDIX C
SITE INSPECTION – OU2

TETRA TECH NUS, INC.

INTERNAL CORRESPONDENCE

C-EPA-06-05-3447W

To: Project File – Raymark Superfund Site, Operable Unit No. 1, Stratford, Connecticut; RACI W. A. No. 144-FRFE-01H3

From: Michael Healey

Date: June 14, 2005

Subject: Field Report – Site Inspection of Subslab Depressurization Systems Activities Conducted on May 11, 2005 for Five-Year Review Report.

cc: H. Ford
File G00127-0500

This field report was prepared by Tetra Tech NUS, Inc. (TtNUS) at the request of the U.S. Environmental Protection Agency (EPA), Region I, under Contract Number 144, Work Assignment Number G00127. TtNUS performed a Site Inspection of the Subslab Depressurization Systems installed by CT DEP and US EPA Region I in the residential area between Route 95 and the Housatonic River from Riverview Place to 231 Housatonic Avenue. The inspections were performed at properties shown on Attachment A, that was prepared by Ron Curran of the Connecticut Department of Environmental Protection.

The Site Inspection consisted of visual observation of the Subslab Depressurization System vents located on the outside of the buildings. The properties equipped with Subslab Depressurization Systems include residential houses, an apartment complex, a professional office building (converted house) and a dance studio.

The location of the properties inspected are presented on the attached figure entitled “Location of Subslab Depressurization Units.” The location of each of the Subslab Depressurization Systems vent is indicated on the figure by a red dot. A total of 11 properties were observed to have two vents and blowers on the side of the building. These properties include the two apartment buildings located at 450 and 470 Ferry Boulevard, 85 Homestead Ave., a duplex house at 48/50 Riverview Place, and 320, 375, 520, 550, 560, 580, and 600, Housatonic Ave.

Two locations that are listed as having a Subslab Depressurization System but where a system vent was not observed are located at 53 Minor Ave. and 100 Riverview Place. The property at 53 Minor Ave. had no evidence of a vent system; however, subsequent conversation with Ron Curran indicates the system is in the attic. The property at 100 Riverview Place looked to have had extensive renovations done on the house. It is possible that either the system was disconnected for the renovations and not reconnected at the time of this site visit or the system has been removed.

At 508 Housatonic Ave the vent system has been disconnected. The vent pipe can be seen exiting the side of the house but the blower and vent riser were not in place. This house is under extensive renovation including installing new siding. Several pictures were taken at this location to document the current condition.

During the site visit to 570 Ferry Boulevard the home owner indicated that the vent system had collected ice during this past winter.

Enclosures – Attachment A
Figure "Location of Subslab Depressurization Units"
Letter on Maintenance of Subslab ventilation system

ATTACHMENT A
Raymark SSD FALL03
Project Status

EPA Person Responsibl	House #		Address	Schedule Info / Miscellaneous Info.	Access Permission	Initial Site Visit	Pilot Testing	Construction Approval	Date of Construction	Confirmatory Testing	Final walk-through	Report
EPA		11	Burr Place	Complete 2001								
M	1	20	Burr Place	Elaine Holman (daughter) wants to be present when installing, to help Loretta understand. Call Daughter!	Yes - 11/3/03	12/2@6pm	12/18 @8am	1/8	1/8 @8am	1/12/04	1/12/04	10/14/2004
E	2	29	Burr Place		Yes-3/2/04	3/5 @9:30am	3/9/2004 @8:30am	3/15/04	3/15-18/2004	3/23/2004	3/24/2004	10/14/2004
L	3	30	Burr Place	Any Time	Yes - 9/19/03	10/2 @9am	10/7/03 @8am	10/16	10/16,17,20,21 @ 8 am	10/21	10/21	10/12/2004
M	4	40	Burr Place	8am-8pm	Yes- 9/25/03	10/7 @1pm	10/16/03 @8am	10/29	10/29 & 10/30@8am	10/30	10/30	10/12/2004
E	5	49	Burr Place		Yes- 9/22/03	10/14 @2:00pm	~~11/12@2pm,~~ 12/3@2pm	12/5	12/5&@12:30pm	12/18	12/18	10/12/2004
	7	400	Ferry Blvd.		NO- REFUSE							
E/L	8	450	Ferry Blvd. (Apt.Complex 1)	Anytime	Yes - 10/20/03	~~11/3@1pm~~ 11/12@2pm	12/1 all day	MAY	MAY	MAY	MAY	10/15/2004
E/L	9	470	Ferry Blvd. (Apt.Complex 2)	Anytime	Yes - 10/20/04	~~11/3@1pm~~ 11/12@2pm	12/1 all day	MAY	MAY	MAY	MAY	10/15/2004
EPA		540	Ferry Blvd	Complete 2001								
EPA		550	Ferry Blvd	Complete 2001								
		570	Ferry Blvd.	Complete 2001								
E	10	30	Homestead Avenue	Best time to call 4-6pm	Yes-10/01/03	10/13 @1:00pm	10/22/03 @1pm	11/6	11/6@8am	11/6	11/6	10/14/2004
M	11	36	Homestead Avenue	Evening	Yes- 9/22/03	11/24 @9am	12/9 @1pm	1/13/04	1/13@8am	1/15	1/15	10-20-04 US Mail
M	12	42	Homestead Avenue	Priority! (Pregnant due-Nov.) call bet. 9am-3pm	Yes - 9/20/03	~~10/1@3.30pm~~,10/9 @12pm	1/6 @8am	1/29/2004	1/29/04	2/4/2004	2/04/04	10/15/2004
L	13	63	Homestead Avenue	Priority. small child, pregant due in 10 wks.	Yes- 10/1/03	10/1 @7.3am	10/10 @8 am	10/28@8am (L)	10/27&28@8am (L)	10/28	10/28	10/18/2004
M	14	64	Homestead Avenue	Anytime, Call in Nov.	Yes- 9/22/03	11/19@10am	12/2 @9 am	1/20/04	1/20,1/21,&1/23	2/4/2004	2/10/04	10/14/2004
L	15	71	Homestead Avenue	After 6pm (has radon system)	Yes - 9/20/03	~~10/7@8am~~, 10/20@5:30pm	10/20@5:30pm	11/3	11/3 @7:30am	11/3	2/4	10/14/2004
M	16	76	Homestead Avenue	after 5pm	Yes-10/20/03	11/5 @5pm	11/20@2pm	12/12	12/12@8am, 2/23-2/27	2/2/504	2/2/504	10/18/2004
P	17	79	Homestead Avenue	After 4pm	Yes - 9/20/03	10/11 @9 am, 10/14@5:15pm	11/12@1pm	1/19@8am	12/8&12/22 @8:30am	2/4/2004	2/4	10/14/2004
P	18	85	Homestead Avenue	After 2pm	Yes - 9/20/03	10/15 @1pm	12/5 @1pm, 1/8/041pm	2/18	2/18-2/19, 3/9	3/9/2004	3/18/2004	10/14/2004
	19	90	Homestead Avenue		No-10/23/03							
P	20	93	Homestead Avenue	Afternoon	Yes- 10/7/03	10/27/03 @11am	11/7 @ 1pm	12/5/03	12/3&4@9am 12/23@8:30am	12/23	12/23	10/14/2004
E	21	96	Homestead Avenue	Any Time	Yes-10/8/03	11/11 @12pm	11/20@1pm	1/6	1/6&7 @8am	1/7	1/7	10/18/2004

ATTACHMENT A
Raymark SSD FALL03
Project Status

Person Responsibl	House #		Address	Schedule Info / Miscellaneous Info.	Access Permission	Initial Site Visit	Pilot Testing	Construction Approval	Date of Construction	Confirmatory Testing	Final walk-through	Report
L	22	108	Homestead Avenue	9pm or later	Yes- 10/1/03	11/17 @7pm	12/29	12/29	12/29 & 12/30 & 12/22	12/30/2003	2/14/2004	10/18/2004
L	23	109	Homestead Avenue		Yes - 10/5/03	11/13@1pm	12/3@8am	1/19/2004	1/19 & 1/20	1/20/2004	1/20/2004	10/15/2004
P	24	125	Homestead Avenue	Call days	Yes - 9/16/03	10/22 @ 12:30 pm	11/5@8am	1/22/2004	1/22 & 1/23 & ?	2/4/2004	2/27	10/14/2004
M	25	231	Housatonic Avenue		Yes- 9/19/03	11/4 @2pm	11/17@10am	12/04/03	12/5 & 1/22 & 2/20	1/22/2004	2/19	10/14/2004
P	26	232	Housatonic Avenue	8 am - 12 pm	Yes- 10/8/03	10/22 @9am	11/3@9am		11/14&17 @9am & ?	May		10/20/04 US Mail
P	27	239	Housatonic Avenue	After 5 MTWThF, anytime SS	Yes- 9/25/03	10/16 @5pm	12/16@1pm	1/15/2004	12/23/03@8am	12/23	1/12	10/18/2004
	28	242	Housatonic Avenue		No - 9/17/03							
P/W	29	251	Housatonic Avenue		Yes-10/01/03	11/3 @ 7:30 am	11/14 @7:30am	12/8/03	12/8@8am	2/26/2004	2/26/2004	10/18/2004
M	30	252	Housatonic Avenue	Call during day	Yes-10/01/03	10/6@8.3am	10/31 & 11/1 @8am	11/25/03	11/24 & 11/25 @8am	25-Nov	11/25	10/18/2004
M	31	262	Housatonic Avenue	Evening	Yes- 9/25/03	11/3@5pm	11/13@1pm &12/2@1pm	2/20/2004	12/19 & 12/22	12/22	2/12/04	10/14/2004
E	32	263	Housatonic Avenue	1:00pm	Yes-11/25/03	12/9/04@2pm	12/29 @1:30	3/2/2004	3/2&3	3/8/2004	3/8/2004	10/14/2004
M	33	273	Housatonic Avenue	Pilot test late afternoon or weekend	Yes - 9/20/03	10/15@7:30am	~~11/22@9am~~ 12/4@9am	12/15	12/15 & 12/16	12/15	12/15	10/14/2004
	34	299	Housatonic Avenue		No - 1/12/04							
E/W	35	304	Housatonic Avenue	8am-5pm	Yes - 9/20/03	10/30@7:00am	11/17 @8am	12/11	12/10@8am	12/11	12/11	10/14/2004
P	36	309	Housatonic Avenue	After 5pm, Mondays Off	Yes - 9/20/03	10/6 @5pm	1/19 @10am	2/16	2/16-2/17	2/18	3/31	10/14/2004
	37	314	Housatonic Avenue		No- no date							
	38	319	Housatonic Avenue		NO - 10/28/03							
M	39	320	Housatonic Avenue	any time	Yes - 10/28/03	11/13 @ 11am	12/11@9am & 1/12@9am	1/29/2004	1/29 & 1/30	2/4/2004	2/4/2004	10/14/2004
P	40	328	Housatonic Avenue	Anytime	Yes- 9/22/03	10/23 @10am	11/5@2pm	11/18	11/17&18 @ 1pm & 10am	12/1	12/1	10/14/2004
P	41	331	Housatonic Avenue	Early Morning	Yes - 9/18/03	10/23 @8am	11/7@8am	11/21 @8am	11/21 @8am	11/21 @8am	11/21 @8am	10/14/2004
E	42	337	Housatonic Avenue	Children- Priority, 4-8pm	Yes- 9/25/03	10/1 @8.3pm	10/10 @1pm	10/14	10/14&10/15 @ 8 am	10/15	10/15	10/18/2004
P	43	338	Housatonic Avenue		Yes - 9/17/03	10/20 @ 8:00 a.m.	11/10 @8.30am, 12/12@8am, wall patching 1/12@8am	3/10/2003	3/10/2004	Troubleshooting needs to be completed (Done need date)		10/18/2004

ATTACHMENT A
Raymark SSD FALL03
Project Status

Person Responsibl	House #		Address	Schedule Info / Miscellaneous Info.	Access Permission	Initial Site Visit	Pilot Testing	Construction Apporval	Date of Construction	Confirmatory Testing	Final walk-through	Report
E	**44**	348	Housatonic Avenue	10 am - 3 pm	Yes - 10/7/03	11/5@10am	~~11/19@10,~~ 12/15@10, 1/4@9	2/17/2004	~~2/16&17&18 @8am~~, 3/1-3@8am	3/9/2003	3/9/2003	10/18/2004
E/W	**45**	355	Housatonic Avenue	Have owner cross out and initial no section of access form at Site Visit	Yes - 9/19/03 (signed both yes and no)	11/13 @ 10am	11/17 @ 1pm	12/8	12/8@9am	12/8	12/8	10/14/2004
DEP		364	Housatonic Avenue	Complete 2002								
M	**46**	375	Housatonic Avenue	Children- Priority	Yes - 9/19/03	9/29 @11am	10/17 @8am (M)	10/30	10/30 &10/31@8am	11/3	11/3	10/14/2004
E	**47**	395	Housatonic Avenue	(w)8.30am-5pm, (h)after 6pm	Yes - 9/19/03	10/24 @8 am	11/6 @ 2pm	10/13	11/13 @8am	10/13	10/13	10/18/2004
E	**48**	405	Housatonic Avenue	Dogs w/ tumors (high levels during EPA test) After 4.30pm	Yes - 9/19/03	9/29 @4pm	10/27@9am	12/17	12/15&16@8a m	12/17	12/23	10/14/2004
L	**49**	415	Housatonic Avenue	NOT SOLD!!! TOP PRIORITY - anytime	Yes- 9/24/03	9/24@1.30pm	9/29	9/29	9/29 & 9/30	9/30	9/30	10/15
	50	422	Housatonic Avenue		No - 9/17/03							
L	**51**	429	Housatonic Avenue	Sat. & Sun. only, busy 9/27	Yes - 9/18/03	10/25@11am	~~1/10@7:30m~~, 2/14@7:30am	14-Feb	~~1/10@7:30m~~, 2/14@7:30am	14-Feb	2/14/2004 (electrical issue - addressed 2/21/04)	10/15/2004
E/P	**52**	434	Housatonic Avenue	anytime	Yes - 12/12/03	2/16@11am	2/19 &1pm	3/4/2004	3/4/04 & 3/5/04, 3/10/04	3/15/2004	3/15/2004	10/14/2004
	53	448	Housatonic Avenue	Engineer-wants to talk to eng. about system	No-10/30/03							
E	**54**	462	Housatonic Avenue	After 6pm	Yes- 9/25/03	10/30@1pm	11/13@1pm& 11/21@1pm	12/17	12/10@8am	12/17	12/17/2003&3 /24/04	10/14/2004
L/W	**55**	471	Housatonic Avenue	Night	Yes - 9/20/03	11/10 @4pm	11/21@8am	12/12	12/12@8am	12/12	12/12	10/18/2004
E	**56**	472	Housatonic Avenue	After 3pm	Yes - 9/19/03	11/14@1pm	12/5@8am	12/11	2/11-12&16-18@8am	12/18	12/18	10/14/2004
P	**57**	481	Housatonic Avenue	6-yr old child (She wants to get air testing done before installation)	Yes- 9/30/03	10/14 @9am	12/4@9am	12/19	12/19@8:30A M	12/19	12/19	10/15/2004
L/W	**58**	489	Housatonic Avenue	mornings	Yes - 10/14/03	10/28 @12pm	11/10 @ 9am	11/19	11/19,20 @8am	11/20	11/20	10/15/2004
L	**59**	492	Housatonic Avenue	**489 will give access to 492**	Yes - 10/18/03	10/28 @ 2pm	patchwork 11/10 @9am, PT=1/5 @9am	1/14	1/14 & 1/15	1/15/2004	3/31/2004	10/15/2004
L	**60**	498	Housatonic Avenue	CALL THIS WEEK!!! -out of town afterwards	Yes - 9/20/03	9/26 @9am	~~10/17@1pm~~, 10/24@10am	11/14/2003	11/10 & 11/11 & 11/14 @ 8am	14-Nov	11/14	10/15/2004

ATTACHMENT A
Raymark SSD FALL03
Project Status

Person Responsibl	House #		Address	Schedule Info / Miscellaneous Info.	Access Permission	Initial Site Visit	Pilot Testing	Construction Apporval	Date of Construction	Confirmatory Testing	Final walk-through	Report
L	**61**	501	Housatonic Avenue	call 9 pm or sat/sun b/f 11 am	Yes - 10/21/03	1/16 @8am	2/14 @9am	3/12/2004	~~2/28 @8am~~ 3/11-3/12@8am	3/12/2004	3/12/2004	10/14/2004
DEP		508	Housatonic Avenue	Complete 2002							12/1/2002	
P	**62**	509	Housatonic Avenue	Husband deaf	Yes- no date	11/18 @8am	11/18 @8am	12/19	12/9 @8am	1/19/2004	1/19	10/20/2004
DEP		515	Housatonic Avenue	Complete 2002							12/1	
P/W	**63**	520	Housatonic Avenue		Yes - 9/17/03	11/3 @3pm	11/13 @9am (all day) & 12/8	1/26	1/26-1/28, 2/5-6, 2/10	2/13/2004	2/16/2004	10/14/2004
L	**64**	550	Housatonic Avenue	Passive system installed for addition Call Paul at work if needed	Yes - 9/16/03	10/13 @3:30pm	11/13 @8am	18-Dec	12/15&12/16 @8am	18-Dec	12/18	10/14/2004
E	**65**	560	Housatonic Avenue		Yes - 9/17/03	10/3 @4pm	10/21 constr. visit w/ ETI, 1/12&13 Serious Patchwork, PT:1/12-1/20	2/13	1/27&28, 2/4-5,13	1/27&28, 2/4-5,13	1/27&28, 2/4-5,13	10/14/2004
	66	575	Housatonic Avenue		No-10/30/03							
E	**67**	580	Housatonic Avenue	Children- Priority, No call: 1:30-4:00 any day, baby zz	Yes - 9/16/03	9/29 @9am	10/9 @8am, 11/3 @1pm	12/30	~~12/3@8am~~, 12/15@8m, 12/22&12/23@8m	12/30	12/30	10/14/2004
E	**68**	600	Housatonic Avenue	Any Time- In process of REMODELING!	Yes - 9/16/03	9/24 @11am	10/8@9am, 2nd try:11/4@8am	2/9/2004	2/9@8am, 2/25-27@8am, 3/8,10/04	3/9/2004	3/24/2004	10/14/2004
P	**69**	605	Housatonic Avenue	mornings	YES-2/13/04	2/23 @3:00pm	3/5 @9:00am & 3/9/04	3/15/2004	3/15&16&23	3/30	3/30	10/18/2004
	70	29	Minor Avenue		No-12/1/03							
	71	42	Minor Avenue		NO- REFUSE							
L	**72**	49	Minor Avenue	After 6.30; son-in-law available for nxt month+/-	Yes- 9/30/03	10/13 @6:30pm	11/21 @9am	12/17/2003	12/17 @7am	12/18/2003	12/18	10/18/2004
L	**73**	53	Minor Avenue	Has Radon System (poor cond.)	Yes - 10/9/03	10/20/03 @9:00am	10/20@9am, 10/23 @2pm add meas.	11/17	11/17 @10am	11/17	11/17	10/20/04 US Mail
P	**74**	56	Minor Avenue		Yes- 9/20/03	10/21 @ 4p.m.	11/18 @4pm	12/30	12/30@8am	12/30	3/31	10/14/2004
W/L	**75**	72	Minor Avenue	Blind- call for appointment when son can be there	Yes-need signature	10/27 @5pm	11/11 @ 9am, 11/4 patchwork@2pm	12/11/2003	12/10&11@9.30	12/11/2003	12/11	10/14/2004
L/W	**76**	76	Minor Avenue	Call after 5:00 pm	Yes - 10/1/03	10/28 @6pm	11/12 @ 8am	11/16/2003	11/24,25 @1pm,8am	11/25/03&11/26/03	11/16	10/18/2004

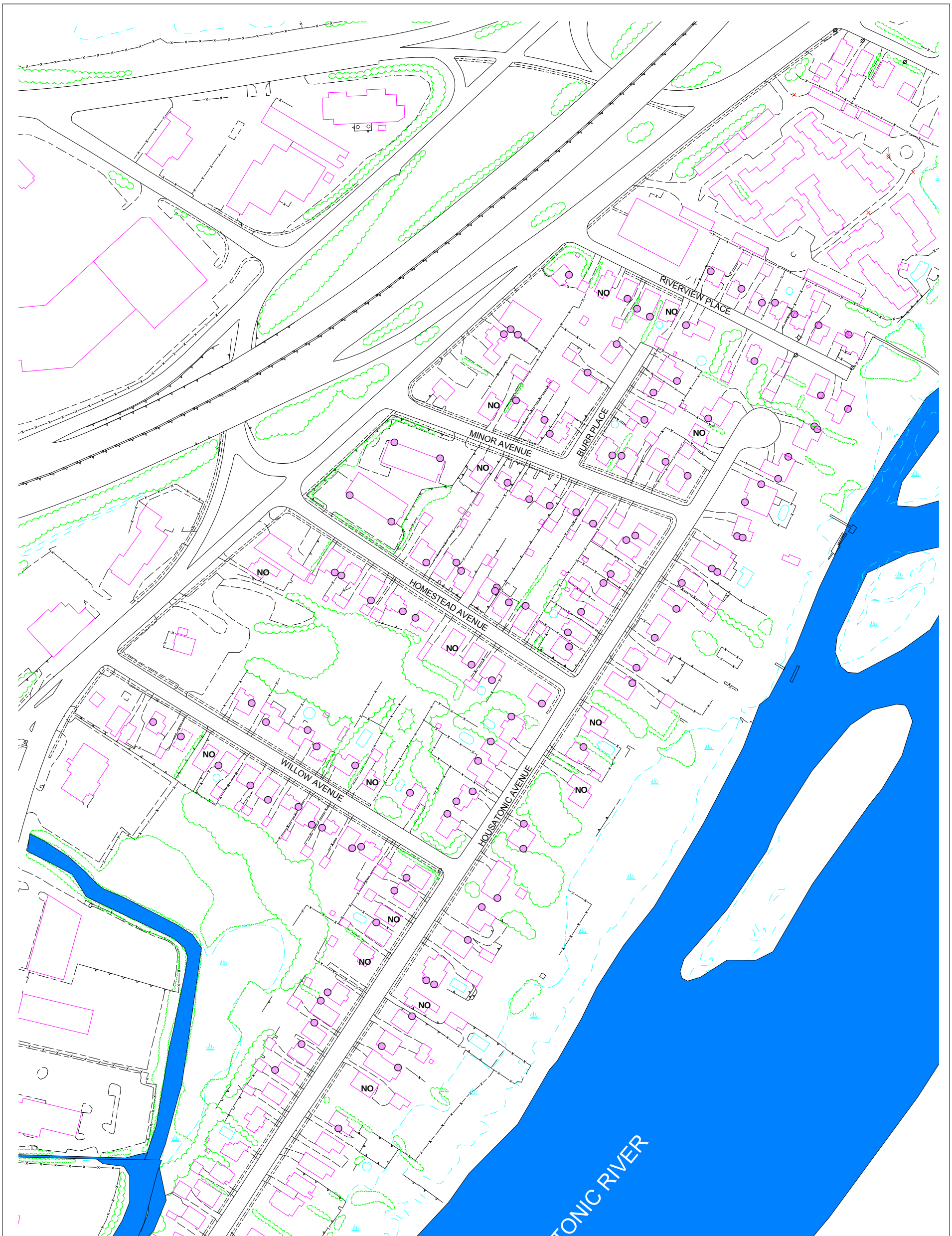
ATTACHMENT A
Raymark SSD FALL03
Project Status

Person Responsibl	House #		Address	Schedule Info / Miscellaneous Info.	Access Permission	Initial Site Visit	Pilot Testing	Construction Apporval	Date of Construction	Confirmatory Testing	Final walk-through	Report
E	**77**	83	Minor Avenue	Call afternoons to schedule appt.	Yes - 9/19/03	11/6 @12pm	12/12@8amPATCHING, 1/12/04@8amPlumbing	2/25/2004	2/9&11&12@8am	2/25/2004	2/25/2004	10/14/2004
W/L	**78**	86	Minor Avenue	Call after 5 for appt.	Yes- need signature	11/6 @5pm	11/18@9am	12/16	12/11@8am	12/16	12/16	10/14/2004
M	**79**	95	Minor Avenue	Retired- call during day	Yes - 9/16/03	10/28 @8am		2/9/04	2/4/-2/6/04, 2/9/04	2/9/2004	2/20	10/14/2004
M	**79A**	96	Minor Avenue	Evenings	Yes - 10/9/03	10/28 @ 3:30pm	11/25@10am	1/13/04	1/13@10am	2/4/2004	2/4/04	10/14/2004
E	**80**	105	Minor Avenue	9-6pm, wants indoor air sampling	Yes- 10/1/03	11/10 @6pm	12/9@8am	1/5	1/5 @8am	1/5	1/5	10/14/2004
E	**82**	113	Minor Avenue	after 6.30pm; wants indoor air sampling	Yes- 10/1/03	10/25@9am	11/11@8am	11/21	11/21 @7:45am	11/21	11/21	10/20/2004
	83/84	28/30	Riverview Place	one house	No - 9/17/03							
M	**85**	40	Riverview Place	Call after 8 pm after 10/19/03	Yes - 10/7/03	10/29@10am	11/19@8am	12/15/03	11/19@8am + 11/25	11/25	1/21	10/15/2004
E	**86**	48/50	Riverview Place	Call during day time. Ron C. to try and fix access form. Dirt floor in half of basement	Yes - 10/9/03 (Signed both no and yes)	11/5 @ 12pm	NEW SLAB: 1/27-2/3	2/9	2/10&11@8am	2/11	2/11	10/18/2004 US Mail
	87	60	Riverview Place	Call after March 9	No 3-5-04							
W/L	**88**	61	Riverview Place	after 4.30pm	Yes - 10/14/03	11/5@5pm	11/11@2pm	0	11/22@8am	12/13@10am	12/13@10am	10/14/2004
M	**89**	65	Riverview Place	11 am to 3 pm	Yes - 10/3/03	~~10/29 @6pm~~ 11/17@6pm	12/4@1pm	12/17/03	12/17&12/18	12/18	2/17/04	10/14/2004
L/W	**90**	80	Riverview Place	9am-4pm	Yes- 9/23/03	11/3 @10am	11/20 @9 am	1/8/2004	1/8 & 1/9, 1/23 @9 am, 2/12&2/13, 2/26	2/26	3/31	10/14/2004
P	**91**	89	Riverview Place	6-10pm	Yes - 9/20/03	10/6@9am	10/31 @ 1pm	01/21/2004	1/21-23@8:30 & 2/2-3, 2/9	2/10/2004	2/13	10/14/2004
L	**92**	95	Riverview Place		Yes - 9/17/03	~~10/22@9am, 10/29@12.30pm,~~ 11/6@3pm	12/2 @8 am	1/8/2004	1/15 & 1/27	2/9/2004	2/9/2004	10/14/2004
L	**93**	99	Riverview Place	Not Tues.	Yes - 9/17/03	10/22 @3pm	11/6@8am	2/23/2004	2/23/2004	2/26/2004	3/31	10/14/2004
W/M	**94**	100	Riverview Place		Yes - 10/7/03	11/4@6pm	11/14@1pm	12/5	12/2@8am	12/5	12/5	10/18/2004
L	**95**	111	Riverview Place	Anytime	Yes- 9/25/03	10/21 @10am	11/4 @ 10am	11/12	11/12 @ 9am	11/12	11/12	10/18/2004
P	**96**	135	Riverview Place	6-8pm (M-F)	Yes- 9/30/03	10/23@5:30pm	12/13@8am	1/8	1/8/03@8am, 1/16, and 2/3, and 3/6	3/6/2004	3/6/2004	10/14/2004
P	**97**	144	Riverview Place		Yes - 9/16/03	10/27 @9am	11/11 @1pm	12/19	12/19@9:30am &12/23	1/8	1/8	10/20/04 US Mail
P	**98**	150	Riverview Place		Yes-10/01/03	10/21 @ 1 pm	10/29 @7am	11/17	11/17 @8am	11/24	12/9	10/14/2004
L	**99**	24	Willow Avenue	Anytime	Yes- 9/22/03	10/3@9am	10/9@1pm	10/24	10/23&24@8am	10/24	10/24	10/20/2004 US Mail to F. Germano
L	**100**	44	Willow Avenue	Anytime	Yes- 9/22/04	10/3@11am	10/14@1pm	10/24	10/23&24@8am	10/24	10/24	10/20/2004 US Mail to F. Germano
DEP		53	Willow Avenue	Complete 2002							12/1	
	101	56	Willow Avenue		VERBAL NO							

ATTACHMENT A
Raymark SSD FALL03
Project Status

Person Responsibl	House #		Address	Schedule Info / Miscellaneous Info.	Access Permission	Initial Site Visit	Pilot Testing	Construction Approval	Date of Construction	Confirmatory Testing	Final walk-through	Report
E	**102**	68	Willow Avenue	Day time	Yes - 9/19/03	11/25@9am	12/11@3.30pm	2/25	~~1/6&7@8am~~ 2/26&2/27	3/17	3/31	10/14/2004
DEP		73	Willow Avenue	Compete 2002							12/1	
E	**103**	86	Willow Avenue	after 5.30pm, wants install during last week of Oct.	Yes - 10/14/03	10/27 @2pm	10/28@8am	10/30	10/29&30@8am	10/30	10/30	10/14/2004
E	**104**	93	Willow Avenue	Tues all day, after 3:00 pm any day	Yes - 9/16/03	10/6@3pm	10/21/03 @8am	11/5	11/4&5 @8am	11/5	11/5	10/14/2004
L	**105**	96	Willow Avenue	son (Pete)	Yes - 9/16/03	11/7@12pm	11/19@8am	30-Jan	1/30 and 2/2 @8:30am	2/5	2/5	10/14/2004
M	**106**	106	Willow Avenue	Any Time before 7pm	Yes - 9/20/03	2/4@2pm	2/10@12:30 pm	2/19/04	2/19@8am	2/19	electrical 2/20	10/18/2004
M	**107**	107	Willow Avenue	Any Time (leave message)	Yes - 9/20/03	10/28@10am	11/25@9am	12/09/03	Crawl space 1/20/04			10/14/2004
M	**108**	115	Willow Avenue		Yes - 9/20/03	11/11@10am	~~11/21@1pm~~ 12/5@9am	12/17/03	12/17@9am	12/17/03	12/18	10/15/2004
L	**109**	116	Willow Avenue	Children- Priority, MWF 11-3, Th 11-1.30	Yes- 9/22/03	9/30 @2.30pm	~~10/8@2pm~~, 10/13@8am:patch, 1/12/04 - patch 8 am, 1/13/04 -	1/13/2004	1/13/04-1/15/04 8 am, 1/19/04@8am	1/23/2004	2/25	10/14/2004
M	**110**	120	Willow Avenue	10am-2pm	Yes- 10/10/03	11/3@10am	12/9@8.30am	1/12/04	1/6@8.30am	1/12/04	1/12/04	10/14/2004
	111	125	Willow Avenue		No-10/30/03							
C/M	**112**	126	Willow Avenue	evenings- after 5pm	Yes - 10/14/03	~~11/24@4.30pm, 12/10@5pm, 12/17@5pm,~~ 1/7@5pm	01-14-04 @ 1 PM	1/26/2003	1/26/03	2/5/2004	2/5/2004	10/14/2004
E	**113**	128	Willow Avenue	After 5pm	Yes- 9/25/03	10/20 @12:00pm	11/10 @1:30pm	11/19	11/19,20@8am	11/20	11/20	10/18/2004
P	**114**	145	Willow Avenue	After 10am	Yes - 9/19/03	10/14 @11am	10/28/03 @ 1pm	11/5@9am	11/5@9am	11/5@4pm	11/6	10/14/2004

Legend
= To Do
= Done
= Issues still to be resolved



LEGEND

Subslab Depressurization Unit

NO No Subslab Depressurization Unit Was Installed at this property

100 0 100 200 Feet

N

Tetra Tech NUS, Inc.
55 Jonspin Road
Wilmington, MA 01887

LOCATION OF SUBSLAB DEPRESSURIZATION UNITS
FIVE YEAR REVIEW
RAYMARK INDUSTRIES, INC.
STRATFORD, CONNECTICUT

FILE G:\gis_arcv\projects\rac\raymkou2\indoorair\epaarp\raymark\hits_map_only.apr	SCALE AS NOTED	
FIGURE NUMBER APPENDIX C	REV 0	DATE 09/8/05

[Name]
[Address]
Stratford, CT 06615

RE: Maintenance of the Sub-Slab Ventilation System

Dear [Name],

The US Environmental Protection Agency (EPA) in cooperation with the Connecticut Department of Environmental Protection (DEP) has investigated the potential for volatile organic compounds (VOCs) in the groundwater to migrate through the soil and enter buildings located within the contaminated groundwater plume emanating from the Raymark NPL site. The results from the investigation have identified VOCs from soil gas entering some homes within this area.

As part of the Raymark Superfund Project, Operable Unit 2 (Groundwater), the DEP has installed a sub-slab ventilation system at your property to correct this potential problem. The sub-slab ventilation system is designed to intercept volatile organic vapors that may be migrating from the groundwater into the building on your property and direct them harmlessly to the outside atmosphere. The Sub-Slab Ventilation systems consist of piping and blowers. The system is designed to create a negative pressure under the building slab thus preventing VOCs from entering the building.

As my staff has discussed with you, after installation of the sub-slab ventilation system, the DEP will maintain the blower portion of the system for as long as the groundwater conditions require the system's operation. However the State of Connecticut will not be responsible for the energy costs to operate the system.

If you have any questions related to the sub-slab ventilation system please contact Ronald Curran of my staff at (860) 424-3764.

Sincerely,

Elsie B. Patton
Director
Planning & Standards Division
Waste Management Bureau

EBP/rhc

APPENDIX C
SITE INSPECTION – OU4

TETRA TECH NUS, INC.

INTERNAL CORRESPONDENCE

C-EPA-07-05-3461W

TO: Project File – Raymark Superfund Site
Operable Unit No. 1
RAC1 W. A. No. 144-FRFE-01H3

FROM: Tracy Dorgan

DATE: July 1, 2005

SUBJECT: Field Report – Site Inspection of Raymark OU4 Ballfield

CC: H. Ford
File: G00127-0500

This field report was prepared by Tetra Tech NUS, Inc. (TtNUS) at the request of the U.S. Environmental Protection Agency (EPA), Region I, under RAC I W. A. No. 144-FRFE-01H3. TtNUS performed a site inspection of the Raymark OU4 – Ballfield on May 10, 2005.

Based on the site inspection, it was noted:

- that the fence erected by EPA has been damaged in a number of locations and does not prevent site access.
- there is a person and a cat living on the property, apparently intermittently.
- heavy vegetation on-site obscures most physical features of the property.

TtNUS (Tracy Dorgan and Kevin O'Neill) performed a site reconnaissance of the Operable Unit 4 property (former Raybestos Memorial Field) in Stratford, CT. At the request of TtNUS, the property owner, Mr. Jack Daley, unlocked the access gate on Frog Pond Ln. to allow access into the paved parking lot portion of the site. Mr. Daley only stayed onsite for a few minutes before leaving with the understanding that we would secure the gate when done. Prior to his departure, it was observed that a mobile home type vehicle, which had previously been parked and used by a man claiming to be the security guard on the paved portion of the site, has been relocated to the wood line near the south-southwest edge of the site. Mr. Daley stated that this mobile home was used occasionally by an old friend of his who is some sort of security guard. Shortly after Mr. Daley left another vehicle entered the site driven by Mr. Joe Marcel who stated that Mr. Daley had agreed to let him take some construction materials and an old trailer from the site and he proceeded to do so.

TtNUS began its inspection by walking the site from the entrance gate to the parking lot and inspecting the physical conditions of the site, it's buildings and other features. Many photos were taken and selected photos are provided in the text. We worked our way from the parking area to the west into the former ball field itself then south across the open field to the boundary fence between the OU4 property and the Contract Plating Property. We inspected the fence

line from south to west and then north along the boundary with the residential properties on Clinton Avenue. TtNUS was unable to penetrate the heavy vegetation above the bleachers and returned to the parking area to complete its inspection. Due to lack of daylight and heavy vegetation we did not make detailed observations of the southwest wooded corner of the site.

Beginning at Frog Pond Lane, the Site appears to be locked, although it is used by Daley Development for storage of construction supplies and excess materials. Based on the visit by Mr. Marcel to remove materials, and the evidence of others transiting across the site (worn paths and trash), it appears that the site is frequently open to access. The gate and fence along Frog Pond Lane appear to be in usable condition although are showing some age and minor damage. The monitoring wells near the entrance gate (MW-521S, MW-402S & B) appear in fine condition, although a detailed inspection was not conducted. The remainder of this Memorandum is presenting a counter clockwise sweep of the site; the remaining pages are pictures with brief text taken from the May 10, 2005 site visit.

Entrance to OU4 Ballfield. Monitoring Well MW-521S shown on left side of photo; Frog Pond Lane shown on right side of photo

The monitoring well MW-402 cluster was covered by leaf litter and cut branches.

The paved parking area is used for storage of construction materials and supplies including trailers and bulk materials. The pavement is degraded and cracked with vegetation growing through. Next 2 pictures.

Monitoring well MW-3 was observed beneath the rear of one of these storage trailers.
Warning signs placed on the interior fences between the parking area and soil covered fields were found in place but obstructed by heavy vegetation. The gate to the large open field was found unlocked and open with obvious signs of use based on the wear pattern and lack of growth.

Moving to the northwest, towards the concession buildings and ball field, the area is heavily overgrown with vegetation and was difficult to observe or photograph in much detail. Old white goods including washing machines were dumped along the edge of the paved area. The vegetation is so severe that in places it is damaging old structures including flagpoles, and bleachers. See next 3 pictures.

The interior of the ball field is a hummocky grass surface with shrubs and trees approaching 25-30 in height interspersed. Next 2 pictures.

No attempt was made to climb the bleachers or check the interior of the structures due to condition and heavy vines and vegetation. Next 2 pictures.

A breach in the two right outfield fences was used to leave the ball field and inspect the open field south of the ball diamond. This breach was originally made during earlier field investigations but had been repaired in the fall of 1998. For unknown reasons, a large wooden utility pole/light stand in between the two outfield fences in this area has been cut down by some one using a chainsaw, this pole fell onto one of the fence sections damaging it; however, it is unclear why the fence breach was made. Next 2 pictures.

From this point we moved across the open grassy field to the south corner where the OU4 site abuts the railroad track and Contract Plating property. In general, the site is hummocky grass with occasional tree's and shrubs. As we moved to the south, signs of illegal dumping of wood, corrugated sheet metal, and more white goods were observed, especially in the area of monitoring well MW-6 (200-E). This photo is taken from that well looking back towards the ball field. Note the white washing machine beside the shrub.

Multiple breaches in the perimeter fence between OU4 and Contract Plating were noted and numbered sequentially as found. Many of these breaches appear to coincide with locations where the fence had been cut and repaired during the RI/FS test pitting activity. Breach number 1 is located approx. 100 feet from the south corner of the fence.

The second breach is still partially wired together, located near the MW-401 well cluster. Next 2 photos.

Between breach number 2 and 3, we encountered the mobile home parked in the wooded area between MW-401 and MW-2. The mobile home is surrounded by garbage and debris including plywood, empty beer cans & liquor bottles, cat-food cans, old clothes, propane bottles and a kerosene heater. There is a heavily worn footpath leading to the mobile home from the gate to the parking area as discussed earlier. See next 3 photos.

In the photo above, monitoring well MW-2 can be seen near the bottom just to the left of the wood-handled brush axe we stuck in the ground as a marker. The well was not opened, but the protective casing hasp is broken so that the well is available for access. The condition of the well was not determined, nor was the repair of protective casing made. We did return the protective casing lid back to the closed position.

Breach number 3 in the perimeter fence may coincide with the cut made to conduct Test Pit 15 during the RI/FS. This cut had been repaired but appears to get frequent used based on the wear path especially on the Contract Plating side. This photo was taken from the Contract Plating property and the wear path is visible at the bottom of the photo.

Breach number 4 is different from the others in that they are complete vertical cuts through the chain-link fence, while breach 4 is a 2.5 foot by 2.5 foot square of fence removed from the base of the fence near a corner. This breach also has a wear path but was more camouflaged than the others.

A possible shelter/hangout for a homeless person was located approx. 50 feet from the corner near breach 3 and 4 on the Contract Plating side of the fence. Wooden pallets, plywood, an old sleeping bag and used food containers were scattered on the ground. Clothing and a machete were hanging from branches and a canteen cup was visible.

Breach number 5 is located approx. 80 feet from the fence corner near Test Pit 16. This breach connects the OU4 site to the backyard of #60 Clinton Ave. It appears that this resident may have been dumping yard waste and other debris including old fence/pallets in the area.

An area located between breach 5 and the corner of the fence was found to have brake pads/clutch plates at the ground surface near a fence post.

Upon further investigation, additional Raymark type waste/fill was noted exposed at the ground surface, especially along the sleep slope leading out of the woodline east of #50 & 60 Clinton Ave.

No further waste or breaches were noted along the western boundary, although much of it was inaccessible due to vegetation.

As TtNUS walked back through the open field near the center of the site, MW-4 was observed in similar slightly damaged condition as in the past (damaged protective casing). Near the unlocked open gate to the parking lot, the path leading to the mobile home appears more significant as if wheeled vehicles may use it for some distance. This may be a remnant artifact from previous vehicle traffic during prior site investigation activities. Two dump piles of construction debris are located to either side of the path adjacent to the fence dividing the paved lot and the soil cover area. The pile to the north of the path is approx. 30'long, 20' wide and 6' tall. The other pile, on the south side of the path, is smaller at approx. 20'long, 10' wide and 3' tall. The debris in these piles consists of sheet metal, wood, pipe, concrete, and old furniture.

The site gate was locked once we completed our documentation. A few photos of the overall site are provided below.

APPENDIX C
SITE INSPECTION – OU5

TETRA TECH NUS, INC.

INTERNAL CORRESPONDENCE

C-EPA-07-05-3462W

TO: Project File – Raymark Superfund Site
Operable Unit No. 1
RAC1 W.A. No. 144-FRFE-01H3

FROM: Tracy Dorgan

DATE: July 1, 2005

SUBJECT: Field Report – Site Inspection of Raymark OU4 Ballfield

cc: H. Ford
File:G00127-0500

TtNUS (Tracy Dorgan and Kevin O'Neill) performed a site reconnaissance of the Operable Unit 5 property (Housatonic Boat Club/Shore Road) in Stratford, Connecticut on May 10, 2005. At TtNUS' request, Mr. Ron Smith, Commodore of the Housatonic Boat Club, unlocked the gate to the boat club on Shore Rd. to allow access into the paved parking lot portion of the site. Mr. Smith set the electric gate to work on a timer to open automatically at 8 am and close at 5 pm for use by the club members for the season. Mr. Smith only stayed onsite for a few minutes before leaving. Mr. Smith commented that there had been no significant changes made to the property except the construction of the boat maintenance structure near the center of the site a couple of years ago. He noted that there were some minor cracks in the pavement, but the club attempted to seal them with asphalt sealer. We could see the evidence of the cracks and repairs with fresh extension cracks beyond the repairs. We opted to complete the site reconnaissance on May 11, 2005 due to time constraints on the 10th.

On May 11, 2005, we began our inspection by walking the site from the south end of Shore Rd. to the north end and then entering the Housatonic Boat Club property. We inspected the boat club property beginning at the entrance gate to the parking lot and inspecting the physical conditions of the site, it's buildings and other features. Many photos were taken and selected photos are provided in the text.

In general the site appears in fine condition with only minor cracking of the pavement and slight differential settling and minor erosion along the wetland perimeter. Here are a few photos beginning at the south end of shore road indicating the mowed lawn and rip-rap edge leading into the wetlands. Pavement conditions can also be noted.

Based on the site inspection, it was noted:

- some of the geotextile material has been exposed throughout the site
- MW-5325 needs some minor repairs

The following photographs were taken during the site inspection and are presented in a counter clockwise fashion beginning at the entrance of the Housatonic Boat Club property.

Some minor erosion along the edge of the rip-rap was noted as seen below

A small area of exposed and cut geotextile was noted on the lawn south of the boat club entrance drive.

The geotextile was exposed in numerous areas where it meets the concrete block retaining wall.

An area lacking topsoil appears to expose concrete or other fill in the same lawn immediately south of the boat club entrance. Next 2 photos.

Monitoring well MW-532S in Shore Rd. was found with a broken road box id and missing lid bolts. The pvc well and locking cap appeared intact. Next 2 photos.

While some maintenance of the pavement has taken place inside the boat club property, the pavement on Shore Rd. itself is heavily cracked along seams with no sealer or patching evident.

Photo of interior of Housatonic Boat Club property with previously cracked, sealed, and re-cracked pavement. The boat maintenance shed is on the right side of the photo.

Steel slag and debris is easily noted within the rip-rap along the causeway south of the main boat club building. Next 2 photos.

View looking north from main boat club building.

An area approx. 20 feet in length immediately south (downstream of the boat ramp structure) appears to have slumped/eroded into the river and may have allowed rip rap from above to fall into the river as well. Next 2 photos.

Areas along the edge of the pavement nearing the river show slight differential settling. Next 3 photos.

Monitoring well MW-530 near the sheet pile wall was found to have frost heave damage causing the road box to be heaved slightly above grade and cracking the surface seal.

No issues were noted with the sheet pile walls other than typical wear and rust. Next 2 photos.

The northernmost retaining wall was difficult to observe due to heavy vegetation covering the fence and other physical obstructions. A possible slight bowing outward was visible by viewing the chain-link fence from end on. Next 2 photos.


ATLAS

Other general site condition photos are shown below. See next 4 photos.

APPENDIX C

ROUTINE FORMS
FOR SITE INSPECTIONS

WEEKLY O&M INSPECTION/MAINTENANCE TASKS
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 1 of** _____

Operator: _____

I. Soil Gas Collection System

Collection/Conveyance Piping

1. Collect/Document Air Stream Parameters for Each SGC Header?	Yes ___ No ___	See Section 5.4 for Sampling Procedures. Record data on Field Logs.
2. Water Present in Drip Legs?	Yes ___ No ___	If yes, indicate which drip leg(s) and remove as outlined in Section 5.3.3.
3. MOVs Operational	Yes ___ No ___	

Air Blowers (B-1, B-2, B-3 & B-5)

1. Unusual Noises/Vibrations	Yes ___ No ___	If yes, indicate which blower on Field Logs.
2. Leaks Present?	Yes ___ No ___	If yes, indicate which blower and where on Field Logs.
3. Document P&I Readings?	Yes ___ No ___	Use Field Logs.

Condensate Pumps

1. Unusual Noises/Vibrations	Yes ___ No ___	If yes, indicate which condensate pump on Field Logs.
2. Leaks Present?	Yes ___ No ___	If yes, indicate which condensate pump and where on Field Logs.

Instrumentation

1. Document P&I Readings?	Yes ___ No ___	Use Field Logs.
2. Check Chart Paper?	Yes ___ No ___	

Vacuum Monitoring Wells

1. Check and Document Vacuum readings?	Yes ___ No ___	

WEEKLY O&M INSPECTION/MAINTENANCE TASKS (Continued)
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 2 of** ____

Operator: _____

II. Condensate Storage Tanks

1. Inspect Integrity of tank system.	Yes ___ No ___	Document any leaks and/or damage.
2. Document Water level?	Yes ___ No ___	
3. Carbon Vent Filter Adsorption Indicator Brown?	Yes ___ No ___	If yes, carbon vent filter needs to be replaced.

III. Vapor Phase Carbon Vessels

1. Inspect for Leaks	Yes ___ No ___	Document any leaks and/or damage.
2. Monitor inlet/outlet Streams?	Yes ___ No ___	Use Field Logs.

IV. Enhanced Soil Gas Collection System

Conveyance Piping

1. Collect/Document Air Stream Parameters for Each ESGC Header?	Yes ___ No ___	See Section 6.3.4 for Sampling Procedures. Document data on Field Logs.

Air Blowers (B-4 & B-6)

1. Unusual Noises/Vibrations	Yes ___ No ___	If yes, indicate which blower on Field Logs.
2. Leaks Present?	Yes ___ No ___	If yes, indicate which blower and where on Field Logs.
3. Document P&I Readings?	Yes ___ No ___	Use Field Logs.

WEEKLY O&M INSPECTION/MAINTENANCE TASKS (Continued)
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 3 of** ____

Operator: _____

Condensate Pumps

1. Unusual Noises/Vibrations Yes ___ No ___ If yes, indicate which condensate pump on Field Logs.
2. Leaks Present? Yes ___ No ___ If yes, indicate which condensate pump and where on Field Logs.

Instrumentation

1. Document P&I Readings? Yes ___ No ___ Use Field Logs.
2. Check Chart Paper? Yes ___ No ___

V. Thermal Oxidizer

1. Calibrate LEL/O_2 Sensor? Yes ___ No ___ See Appendix D for procedure.
2. Calibrate Flow Transmitter? Yes ___ No ___ See Appendix D for procedure.
3. Check Chart Paper? Yes ___ No ___

VI. DNAPL Recovery System

Recovery Wells

1. Leaks Present? Yes ___ No ___ If yes, indicate location and severity.
2. Water Present in Well Yes ___ No ___ If yes, indicate location and severity.
3. Document Totalizing Flow? Yes ___ No ___

WEEKLY O&M INSPECTION/MAINTENANCE TASKS (Continued)
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 4 of** ____

Operator: _____

Conveyance Piping

1. Heat Tracing Operational?	Yes ___ No ___	
2. Heat Tracing Damaged?	Yes ___ No ___	If yes, indicate location and severity.
3. Liquid Present in Leak Detection Ports?	Yes ___ No ___	If yes, indicate location.
4. Check Pressure Gauge?	Yes ___ No ___	Document on Field Log.

DNAPL Extraction Pumps

1. Pumps Operational?	Yes ___ No ___	If no, indicate which pump is not.
2. Check Control System?	Yes ___ No ___	

DNAPL Storage Tank

1. Leaks Present?	Yes ___ No ___	If yes, indicate location and severity.
2. Document volume of DNAPL in tank.	Yes ___ No ___	Use Field Log.

Fire Suppression System

1. Backup Batteries Charged?	Yes ___ No ___	See Appendix G.
2. Document Discharge Canister Pressure.	Yes ___ No ___	

VII. Building Systems

Heating

1. Dust Present on Heating Elements?	Yes ___ No ___	If Yes, clean as required.

Ventilation

1. Fans Operational?	Yes ___ No ___	

WEEKLY O&M INSPECTION/MAINTENANCE TASKS (Continued)
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 5 of** ____

Operator: _____

Building Systems

1. Leaks in roof/walls? Yes ___ No ___ If yes, indicate location and severity.
2. Standing water present? Yes ___ No ___ If yes, indicate location and severity.
3. Check Security System? Yes ___ No ___
4. Check Autodialer? Yes ___ No ___

Pavement

1. Pavement clear of debris? Yes ___ No ___ If No, indicate location and severity.

W

Western Treatment System - Field Log

Date: _____

Time: _____

Operator: _____

SGC Collection Headers

Collection Header	Valve Position (% Open)	Flowrate [1] (scfm)	PID Reading (ppm)	GC Analysis Performed? [2]
Zone 6 (V-101)				
Zone 5 (V-103)				
Zone 4 (V-105)				
Zone 1 (V-107)				
Zone 2 (V-109)				
Zone 12 (V-111)				
Zone 3 (V-113)				

1 - As measured with Hot Wire Anemometer
2 - Attach Field GC analysis
NM - Not Measured
NA - Not Applicable

Air Blower Skid #1

FIT - 1101 (scfm) _____
FIT - 1106 (scfm) _____
TI - 1104 (° F) _____
VI - 1103 (psi) _____
VI - 1107 (psi) _____
PI - 1107 (psi) _____

Air Blower Skid #2

FIT - 2101 (scfm) _____
FIT - 2106 (scfm) _____
TI - 2104 (° F) _____
VI - 2103 (psi) _____
VI - 2107 (psi) _____
PI - 2107 (psi) _____

DNAPL Recovery System

Recovery Well #	On/Off	Total Flow [3] (gallons)	Visible Leaks? [4]	Well Sampled ? [5]
RW-1				
RW-2				
RW-3				
RW-5				
RW-6				

3 - As indicated on flow meter within well vault
4 - Indicate location and severity in notes
5 - Attach physical/chemical analysis
NM - Not Measured
NA - Not Applicable

Storage Tank Volume (gallons) _____

W

Western Treatment System - Field Log (Continued)

System Alarms/Shutdowns (description, causes & actions taken)

Changes to Process Settings (equipment operation, valve positions, setpoints, etc.)

Notes:

W

Date:

Time:

Operators:

Raymark O&M

Vacuum Monitoring Well Log

Vacuum Monitoring Wells ID

vm-1	_____
vm-3	_____
vm-4	_____
vm-5	_____
vm-6	_____
vm-7	_____
vm-8	_____
vm-9	_____
vm-10	_____
vm-11	_____
vm-12	_____
vm-13	_____
vm-14	_____
vm-15	_____

Comments: _____

_____

_____

_____

QUARTERLY O&M INSPECTION/MAINTENANCE TASKS
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 1 of** ____
Operator: _____

I. Soil Gas Collection System

Collection/Cenveyance Piping

1. Water Present in Drip Legs? Yes ___ No ___ If yes, indicate location and remove.

Pressure/Vacuum Relief Valves

1. Inspect Mechanical Seals Yes ___ No ___ Document Condition.

II. Thermal Oxidizer

1. Inspect Control Panel Connections Yes ___ No ___

2. System Interlocks Functional? Yes ___ No ___
   Dust Magnetic Contacts? Yes ___ No ___

MONTHLY O&M INSPECTION/MAINTENANCE TASKS
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 1 of** _____
Operator: _____

I. RCRA CAP

Cap Inspection

1. Soil Erosion?	Yes ___ No ___	If yes, indicate location and severity on Site Plan.
2. Differential Settling?	Yes ___ No ___	If yes, indicate location and whether settling is greater than or less than 6 inches on Site Plan.
3. Evidence of Burrowing Animals?	Yes ___ No ___	If yes, indicate location and severity on Site Plan.
4. Damage to Survey Monuments?	Yes ___ No ___	If yes, indicate type/severity.
5. Unauthorized Woody Vegetative Growth?	Yes ___ No ___	If yes, indicate type, location Vegetative and severity on Site Plan.

Pavement Inspection

1. Cracks >1 inch?	Yes ___ No ___	If yes, indicate location and severity on Site Plan.
2. Potholes?	Yes ___ No ___	If yes, indicate location and severity on Site Plan.
3. Differential Settling?	Yes ___ No ___	If yes, indicate location and whether settling is greater than or less than 6 inches on Site Plan.
4. Vegetative Growth?	Yes ___ No ___	If yes, indicate type, location and severity on Site Plan.

Perimeter Fence

1. Damage Presence?	Yes ___ No ___	If yes, indicate location and severity on Site Plan.
2. Evidence of Intrusion?	Yes ___ No ___	If yes, indicate location on Site Plan.

MONTHLY O&M INSPECTION/MAINTENANCE TASKS (Continued)
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 2 of** ____
Operator: _____

Vegetative Cover

1. Bare Spots > 6"?	Yes ___ No ___	If yes, indicate location and severity on Site Plan.
2. Traffic Damage?	Yes ___ No ___	If yes, indicate location and severity on Site Plan.

Stormwater Collection System

1. Inspect Stormceptors?	Yes ___ No ___	Use Stormceptor Inspection Monitoring Form.

Monitoring Wells

1. Inspect integrity of wells?	Yes ___ No ___	

II. Soil Gas Collection System

Air Blowers (B-1, B-2, B-3 & B-5)

1. Belts Cracked/Worn? Form.	Yes ___ No ___	If yes, indicate which blower on Field Log.
2. Sludge Present in Mositure Separators?	Yes ___ No ___	If yes, indicate which blower on Field Log.
3. In-Line Filter Clean?	Yes ___ No ___	If no, replace.
4. Leaks?	Yes ___ No ___	If yes, indicate which blower, location and severity on Field Log.

Condensate Pumps

1. Inspect Mechanical Seals	Yes ___ No ___	Document Condition.

MONTHLY O&M INSPECTION/MAINTENANCE TASKS (Continued)
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 3 of** ____
Operator: _____

III. Thermal Oxidizer

1. Check Fuel Train Valves?	Yes ___ No ___	See Appendix D.
2. Inspect UV Sensor?	Yes ___ No ___	See Appendix D.
3. Inspect Ignition Plug?	Yes ___ No ___	See Appendix D.

IV. DNAPL Recovery System

Fire Suppression System

1. Inspect Canisters?	Yes ___ No ___	Document damage.
2. Inspect piping/nozzles?	Yes ___ No ___	Document damage.
3. Check Inspection/ Certification Date?	Yes ___ No ___	Document.

V. Building Systems

Heating

1. Thermostats Operational?	Yes ___ No ___	

Ventilation

1. Calibrate Combustion Gas Sensor?	Yes ___ No ___	

Security

1. Dust Magnetic Contacts?	Yes ___ No ___	

Fire Extinguishers

1. Inpect for Damage?	Yes ___ No ___	If damaged, indicate severity.
2. Check Inspection/ Certification date?	Yes ___ No ___	Document.

ANNUAL O&M INSPECTION/MAINTENANCE TASKS
Raymark Superfund Site
Stratford, CT

Date: _____ **Page 1 of** ____
Operator: _____

I. RCRA Cap

Cap Inspection

1. Damage to Survey Monuments?	Yes ___ No ___	If yes, indicate type/severity

II. DNAPL Recovery System

Fire Suppression System

1. Conduct Annual Inspection?	Yes ___ No ___	

III. Building Systems

Fire Extinguishers

1. Conduct Annual Inspection?	Yes ___ No ___	

IV. Stormwater Treatment Units

1. Cleanout sediment and oil?	Yes ___ No ___	Adjust maintenance schedule based on condition of Stormceptors.

APPENDIX D

RAYMARK INDUSTRIES, INC. FACILITY (OU1) ARARS LIST—TABLES 4-2A AND 4-2B, *FINAL SOURCE CONTROL FEASIBILITY STUDY REPORT*, APRIL 1995

TABLE 4-2A
CHEMICAL-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE SC-2
DECONTAMINATION, DEMOLITION, CONSOLIDATION, NAPL REMOVAL, CAPPING, AND INSTITUTIONAL CONTROLS
FINAL FEASIBILITY STUDY REPORT
RAYMARK INDUSTRIES, INC. FACILITY, STRATFORD, CONNECTICUT

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION
Criteria, Advisories, and Guidance	TSCA PCB Spill Clean-up Policy (40 CFR 761.120-135)	To Be Considered	This policy applies to recent PCB spills and establishes clean-up levels for PCB spills of 50 ppm or greater at 10 ppm for non-restricted access areas and 25 ppm for restricted access areas.	Standards were considered as guidelines for soil cleanup at the Raymark Facility to address PCB contamination.
	EPA Risk Reference Doses (RfDs)	To Be Considered	RfDs are dose levels developed by EPA for use in estimating the non-carcinogenic effects of exposure to toxic substances.	EPA RfDs were used to assess health risks due to exposure to noncarcinogenic contaminants present at the site. RfDs were used in development of PRGs for facility soils. SC-2 would be consistent with PRGs developed.
	Proposal for the Connecticut Cleanup Standard Regulations (22a-133K CGS)	To Be Considered	The proposed regulations would define minimum hazardous waste site remediation standards, specify numeric criteria for cleanup of soils and groundwater, and specify a process for establishing alternative, site-specific cleanup standards.	The proposed regulations were considered in determining soil cleanup standards. SC-2 would be consistent with the proposed regulations since the selected PRGs are more protective than the proposed direct exposure criteria.
	EPA Carcinogen Assessment Group Potency Factors	To Be Considered	EPA Carcinogenic Potency Factors (CPFs) are used to compute the individual incremental cancer risk resulting from exposure to carcinogens.	CPFs were used to assess health risks due to exposure to carcinogens present at the site. These factors were used in development of PRGs for site soils. SC-2 would be consistent with the PRGs.
	Guidance on Remedial Actions at Superfund Sites with PCB Contamination (EPA/540/G-90/007, August 1990)	To Be Considered	Describes various scenarios and considerations pertinent to determining the appropriate level of PCBs that can be left in each contaminated media to achieve protection of human health and the environment.	This guidance was considered in determining the appropriate level of PCBs that may be left in the soil. SC-2 would be consistent with the guidance.

TABLE 4-2B
ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE SC-2
DECONTAMINATION, DEMOLITION, CONSOLIDATION, NAPL REMOVAL, CAPPING, AND INSTITUTIONAL CONTROLS
FINAL FEASIBILITY STUDY REPORT
RAYMARK INDUSTRIES, INC. FACILITY, STRATFORD, CONNECTICUT

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Requirements	RCRA - General Facility Standards (40 CFR 265.10 - 265.18	Applicable	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	Remedial actions conducted under this alternative would be constructed and operated in accordance with the substantive provisions of this requirement. Alternative SC-2 would comply.
	RCRA - Preparedness and Prevention (40 CFR 265.30 - 265.37)	Applicable	Outlines requirements for safety equipment and spill control.	Safety and communication equipment would be maintained at the site and local authorities would be familiarized with the site operations, in accordance with the substantive provisions of these requirements. Alternative SC-2 would comply.
	RCRA - Contingency Plan and Emergency Procedures (40 CFR 265.50 - 265.56)	Applicable	Outlines requirements for emergency procedures to be used following explosions, fires, etc.	Contingency plans would be developed and response activities would be implemented in accordance with the substantive provisions of these requirements. Alternative SC-2 would comply.
	RCRA - Groundwater Monitoring (40 CFR 265.90 - 265.93)	Applicable	Details requirements for groundwater monitoring and responding to releases from Solid Waste Management Units.	A groundwater monitoring program would be developed in accordance with the substantive provisions of these requirements. Alternative SC-2 would comply.
	RCRA - Closure and Post-Closure (40 CFR 265.110 - 265.120)	Applicable	Details requirements for closure and post-closure of hazardous waste facilities.	Remedial actions implemented under this alternative would be designed to meet the substantive provisions of this requirement. Alternative SC-2 would comply.

TABLE 4-2B
ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE SC-2
DECONTAMINATION, DEMOLITION, CONSOLIDATION, NAPL REMOVAL, CAPPING, AND INSTITUTIONAL CONTROLS
FINAL FEASIBILITY STUDY REPORT
RAYMARK INDUSTRIES, INC. FACILITY, STRATFORD, CONNECTICUT

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Requirements (Continued)	RCRA - Tank Systems Closure & Post-closure Care (40 CFR 265.197)	Applicable	Contains closure and post-closure requirements for tank systems or individual tanks used for storage of hazardous wastes.	Decontamination and removal of hazardous waste storage tanks would be conducted in accordance with the substantive provisions of these requirements. Alternative SC-2 would comply.
	RCRA - Surface Impoundments (40 CFR 265.228)	Applicable	Details the closure requirements for a RCRA surface impoundment.	The design, construction, maintenance, and monitoring of the cap would meet the substantive provisions of this requirement. SC-2 would comply.
	RCRA - Landfills (40 CFR 265.310)	Applicable except for (40 CFR 265.310(b)(2))	Includes requirements for the closure and post-closure of landfills.	SC-2 would comply since a final cover would be designed and constructed to meet the ARAR.
	TSCA - PCB Storage and Disposal (40 CFR 761.60, .75, .79)	Applicable to PCBs at 50 ppm or greater, removed after February 17, 1978.	This regulation establishes standards for the storage, disposal, and incineration of PCBs at a concentration greater than 50 ppm.	SC-2 would comply with the exception of certain landfill requirements which will be waived under TSCA.
	CAA NESHAPS (40 CFR 61 Subpart M (61.145, 61.150, 61.151) Subpart M, 61.154	Applicable Relevant and Appropriate	These regulations specify requirements regarding removal, management, and disposal of asbestos.	Handling and disposal of soils containing asbestos and building demolition debris containing asbestos would comply with the substantive provisions of these regulations. Alternative SC-2 would comply.

TABLE 4-2B
ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE SC-2
DECONTAMINATION, DEMOLITION, CONSOLIDATION, NAPL REMOVAL, CAPPING, AND INSTITUTIONAL CONTROLS
FINAL FEASIBILITY STUDY REPORT
RAYMARK INDUSTRIES, INC. FACILITY, STRATFORD, CONNECTICUT

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN TO ATTAIN REQUIREMENT
State Regulatory Requirements	Connecticut Air Pollution Regulations - Stationary Sources (Sec. 22a-174-3 RCSA)	Applicable	Requires that stationary sources of air pollutants meet specified standards prior to construction and operation. Prohibits operation of sources that interfere with attainment of Air Quality Standards.	The gas collection and treatment system would be designed to meet substantive standards established under these regulations. Alternative SC-2 would comply.
	Connecticut Air Pollution Regulations (Sec. 22a-174-4, 22a-174-5, and 22a-174-7 RCSA)	Applicable	These sections specify air emissions monitoring requirements, emissions sampling and analysis methods, and general air pollution control equipment operation requirements.	Operation and monitoring of the emission control systems would be conducted in accordance with the substantive requirements of these regulations. Alternative SC-2 would comply.
	Connecticut Air Pollution Regulations - Fugitive Dust Emissions (RCSA 22a-174-18b)	Applicable	Requires that reasonable precautions be taken to prevent particulate matter from becoming airborne during demolition and construction activities and material handling operations.	Activities involving building demolition, soil excavation or handling, and cap construction would be conducted in a manner to minimize fugitive dust emissions from the facility. Alternative SC-2 would comply.
	Connecticut Air Pollution Regulations - Hazardous Air Pollutants (RCSA 22a-174-29)	Applicable	Establishes testing requirements and allowable concentrations for any stack emission for the constituents listed.	Emissions control systems for vapor control would be designed and operated to meet the substantive requirements of these regulations. Alternative SC-2 would comply.
	Connecticut Hazardous Waste Site Management Regulations (Sec. 22a-449(c)-105, RCSA)	Applicable	These regulations outline requirements for the management and disposal of hazardous wastes, and the construction, location, operation, and closure of hazardous waste treatment, storage, and disposal facilities. These regulations incorporate by reference substantial portions of 40 CFR 265 (RCRA).	This alternative would comply with those portions of the regulations that are more stringent than the corresponding federal RCRA regulations cited herein.

TABLE 4-2B
ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE SC-2
DECONTAMINATION, DEMOLITION, CONSOLIDATION, NAPL REMOVAL, CAPPING, AND INSTITUTIONAL CONTROLS
FINAL FEASIBILITY STUDY REPORT
RAYMARK INDUSTRIES, INC. FACILITY, STRATFORD, CONNECTICUT

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN TO ATTAIN REQUIREMENT
State Regulatory Requirements (Continued)	Connecticut Water Quality Standards (issued pursuant to Sec. 22a-426 CGS)	Applicable	Establishes designated uses for groundwater and surface water and identifies the criteria necessary to support these uses.	SC-2 would comply with water quality standards since actions are taken to minimize further degradation of groundwater and surface water.
	Connecticut - Discharge of Stormwater Associated with Industrial Activity (Sec. 22a-430b, 22a-430, CGS; Sec. 22a-430-1 to -8, RCSA)	Applicable	Establishes permit, monitoring and reporting requirements for the management and discharge of storm waters.	SC-2 would comply with the substantive requirements of this regulation.
	Connecticut - Air Pollution Control - Control of Odors (Sec. 22a-174-23 RCSA)	Applicable	This regulation prohibits emission of substances that constitute nuisances because of objectionable odors. Several compounds have specific concentration limits.	SC-2 would comply with this regulation during implementation.
Criteria, Advisories, Guidance	TSCA PCB Spill Clean-up Policy (40 CFR 761.120-135)	To Be Considered	This policy applies to recent PCB spills and establishes cleanup levels for PCB spills of 50 ppm or greater at 10 ppm for non-restricted access areas and 25 ppm for restricted access areas.	This policy would be considered in the management of PCB contamination.
	Guidance on Remedial Actions of Superfund Sites with PCB Contamination (EPA/540/G-90/ 007, Aug. 1990)	To Be Considered	Describes various scenarios and considerations pertinent to determining the appropriate level of PCBs that can be left in each contaminated media to achieve protection of human health and environment.	This guidance was considered in management of PCB contamination under Alternative SC-2, and it would be consistent with this guidance.

TABLE 4-2B
ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE SC-2
DECONTAMINATION, DEMOLITION, CONSOLIDATION, NAPL REMOVAL, CAPPING, AND INSTITUTIONAL CONTROLS
FINAL FEASIBILITY STUDY REPORT
RAYMARK INDUSTRIES, INC. FACILITY, STRATFORD, CONNECTICUT

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN TO ATTAIN REQUIREMENT
Criteria, Advisories, Guidance (Continued)	CAA NAAQS for Particulate Matter (40 CFR 50.6)	To Be Considered	The particulate matter NAAQS specifies maximum primary and secondary 24 hour concentrations for particulate matter in the ambient air. These ambient air concentrations are not designed to apply to specific sources; rather, states may promulgate State Implementation Plan emission limits applicable to sources, which would result in attainment and maintenance of the NAAQS. Connecticut has not promulgated any particulate matter emission limits applicable to this source.	Fugitive dust emissions from soil-waste handling activities would be minimized with temporary enclosures and dust suppressants, if necessary. These measures should be sufficient to prevent any exceedences in the ambient air of the 150 $\mu g/m^3$ 24-hour primary standard for particulate matter. Alternative SC-2 would be consistent.
	RCRA, Air Emissions from TSDFs, (40 CFR, Part 265, Subpart CC) (Proposed 56 Fed Reg. 33490-33598, 7/22/91)	To Be Considered	Proposed standards for air emissions from treatment, storage, disposal facilities with VOC concentration equal to or greater than 500 ppm.	Proposed standards would be considered in design of the vapor control system if threshold VOC concentrations are met. Alternative SC-2 would be consistent.
	U.S. EPA Technical Guidance - Final Covers of Hazardous Waste Landfills and Surface Impoundments (EPA/530-SW-89-047)	To Be Considered	Provides technical specifications for the design of multi-layer covers at landfills where hazardous wastes were disposed.	This guidance would be considered in the design of the cap and associated systems.

TABLE 4-2B
ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE SC-2
DECONTAMINATION, DEMOLITION, CONSOLIDATION, NAPL REMOVAL, CAPPING, AND INSTITUTIONAL CONTROLS
FINAL FEASIBILITY STUDY REPORT
RAYMARK INDUSTRIES, INC. FACILITY, STRATFORD, CONNECTICUT

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN TO ATTAIN REQUIREMENT
Criteria, Advisories, Guidance (Continued)	Proposal for the Connecticut Cleanup Standard Regulations (22a-133K CGS)	To Be Considered	The proposed regulations would define minimum hazardous waste site remediation standards, specify numeric criteria for cleanup of soils and groundwater, and specify a process for establishing alternative, site specific cleanup standards.	Portions of this guidance would be considered in implementing SC-2.

Notes:

CGS - Connecticut General Statutes
RCSA - Regulations of Connecticut State Agencies

APPENDIX E

CTDEP O&M ADDENDUM

ADDENDUM TO THE FINAL OPERATION & MAINTENANCE MANUAL
RAYMARK SUPERFUND SITE
STRATFORD, CONNECTICUT
MAY 1998

12.0 Operations & Maintenance Plan, Addendum 1

The following sections of the Final Operations and Maintenance Manual, prepared by Foster Wheeler Corporation in July 1998, have been amended to reflect changes to the site.

1.4 Site Description

The site was redeveloped in 2001, and currently contains three retail stores and parking areas. In 2005, a bank was added on the Western side of the site. EPA and DEP reviewed and provided approvals for all work associated with this redevelopment. All construction drawings related to the redevelopment were submitted by the developer, approved by CTDEP and EPA, and are part of the agencies records.

4.1.2 Water Quality Unit Maintenance

The quarterly inspection of the 16 water quality units (WQU) is the responsibility of the current retailers association. Any necessary cleaning of the WQU is also their responsibility. This responsibility was transferred from the CTDEP to the property owners after the site was redeveloped in 2001.

4.3 Sump Pumps

Counters were added to the sump pump controls to keep track of their running time. Each pump has a counter which begins when the pump turns on and stops counting when the pump shuts off, allowing the O&M operator to verify that the pumps have been working properly. The counter numbers are recorded on the western field log each week, and checked against the previous week's numbers to determine that the pumps have been running.

5.7 Soil Gas Collection System Vapor Phase Carbon Units

The vapor phase carbon units are no longer used in the western soil gas treatment system. Based on the results of the air sampling of post treatment emissions from the west building, conducted from September 1998 through February 2004, the carbon vessels were no longer needed to remove volatile organic compounds (VOCs) from effluent air for the treatment system. The stack emissions VOC concentrations were calculated for each air sampling period, and were below the maximum allowable stack concentrations each time. In April 2004, the vapor phase carbon units were removed and the exhaust is currently vented directly to the exterior atmosphere.

6.6 Enhanced Soil Gas Collection System Thermal Oxidizer

The thermal oxidizer was disconnected in May 2005, and the soil gas and enhanced soil gas collection systems are currently treated with vapor phase carbon units. Since 1998, the thermal

oxidizer was used in conjunction with a soil vapor extraction system to treat soil vapor at the site. Based on soil vapor analytical data, increasing energy and maintenance costs for the thermal oxidizer, and discussions with CTDEP, the thermal oxidizer was replaced with activated carbon treatment units. The carbon sizing estimate used for the system design was based on the quarterly air sampling data collected from September 1998 to November 2004, and the soil vapor extraction flow rates collected weekly while the system was in operation. The carbon treatment system consists of six, 175 pound, virgin activated carbon vessels. The carbon units were installed in 3 parallel sets of 2 units each (primary and secondary units) in series. The influent and effluent air streams on the carbon units, as well as the air streams between the carbon units, are monitored with a photoionization detector as part of the weekly maintenance tasks. These results are recorded on the Eastern Treatment Field Logs and the Weekly O&M Inspection/Maintenance Task forms. Details of the carbon units and system design are provided in new Appendix P, Eastern System Carbon Adsorption Treatment System. A Standard Operating Procedure is being developed for the new carbon treatment system and will also be included in Appendix P.

7.5 DNAPL Storage Tank

The tank level sensor was replaced in September 2000, with a new sensor. The original Gems sensor was not working correctly, thus it was replaced with a new Drexel Brook ultrasonic sensor. The new sensor manual is provided in Appendix E.

The DNAPL storage tank was replaced in June 2005. The original stainless steel tank developed a leak in July 2003, and the tank was pumped out and cleaned at that time. The tank was removed and replaced with a fiberglass reinforced plastic tank. The new tank is the same size (1,000 gallons), with the same connections as the old tank. Details and drawings of the new tank are provided in Appendix E.

Table 9-1 Groundwater Monitoring Wells

The tops of a few of the groundwater monitoring wells were raised during the site redevelopment in 2001. An updated table with the new well elevations is provided as Table 9-1A.

9.6 Monitoring Well Sampling Schedule and Well Sampling Procedures

In July 1999 the number of groundwater monitoring wells included in the quarterly monitoring was changed from 14 to 12, six of which are the same as listed in the O&M manual and six that are different than listed in the manual. These 12 monitoring wells are 1S, 2S, 4S, 6M, 7S, 9S, 9D, 10S, 12S, 13S, 13D and 15S. The quarterly groundwater sampling schedule was changed from quarterly to semiannually in April 2003.

ADDENDUM TO THE FINAL OPERATION & MAINTENANCE MANUAL
RAYMARK SUPERFUND SITE
STRATFORD, CONNECTICUT
MAY 1998

10.1 Western Treatment Building

An emergency shower and eye wash station, and a sink were added to the western treatment building in August 2005. These were added into the equipment room of the building. CTDEP notified EPA of this work on June 16, 2005 and provided a copy of the proposed construction drawings for EPA records. When this work is complete, final record drawings will be prepared. Manufacturers' literature for the water/sewer service components and the shower and eyewash are provided in Appendix M.

10.7 PLC System Alarm Display Panel

The alarm display units in each building were replaced with new units in June 2005. The original Allan Bradley Messageview units stopped working and it was more cost effective to replace them with new units than to repair them. They were replaced with Vorne Industries Message Display units. The new user's manuals and programming information are provided in Appendix I.